VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the revocation and reissuance of the VPDES permit listed below. This permit is being processed as a minor, municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. (effective 1/6/2011). The discharge results from the operation of a municipal wastewater treatment facility at a regional security center. This permit action consists of revoking the permit and reissuing it in lieu of modification, implementing a more stringent ammonia limitation for protection of water quality, removing a zinc limitation, removing a cyanide limitation, removing hydrogen sulfide monitoring, removing total residual chlorine limitations and requirements due to the replacement of chlorine disinfection with an ultraviolet system, and updating the permit to reflect current agency policies and procedures.

In the permit effective January 16, 2008, a four year schedule of compliance for a new copper limitation, as well as cyanide and zinc limitations, was included. The current owner assumed ownership of the facility two and a half years into the schedule of compliance. The previous owner did not perform any actions that would have lead to compliance with the new limitations. The current owner proposed to extend the four year compliance schedule for copper to 4 years and 11 months in order to perform a Water Effect Ratio (WER) study for copper. Following the study, a later modification may potentially be necessary to incorporate the results of the WER. According to GM10-2003, when a modification request falls within 15 months of a permit expiration date, a permit may be revoked and reissued in lieu of modification and is used on a case by case basis. Additionally, when the permit was reissued effective January 16, 2008, the limitation for cyanide was established based on total cyanide data submitted in the application. This limitation was applied in error because the Virginia Water Quality Standard for cyanide is for the *free* component of cyanide, not *total.* With this permit action, the cyanide limitation is being removed. Review of additional zinc data indicates that no zinc limitation is needed to protect water quality; therefore the zinc limitation is being removed. The hydrogen sulfide data has been evaluated and in accordance with current agency policy continued monitoring is unnecessary and is being removed.

SIC Code: 4952 – Sewerage Systems.

1.	Facility Name and Address:	Central Middlesex STP 234 Oak Landing Road Saluda, VA 23149 Middlesex County
2.	Permit No. VA0073318	Permit Expiration Date: January 15, 2013
3.	Owner Contact:	
	Name:	James Pletl
	Title:	Hampton Roads Sanitation District (HRSD) Chief of Technical Services Divisions
	Telephone No.:	757-460-4246
	Address:	1436 Air Rail Avenue, Virginia Beach, VA 23455
4.	Application Complete Date:	September 2, 2011
	Permit Drafted By:	Jaime Bauer
	DEQ Regional Office:	Piedmont Regional Office
	Reviewed By:	Brad Ricks Date: October 20, 2011 Curt Linderman Date: November 2, 2011
	Public Comment Period:	December 8, 2011 to January 9, 2012
5.	Receiving Stream:	
	Name:	Unnamed Tributary to Urbanna Creek
	River Mile:	3-XCM000.80
	Basin:	Rappahannock River
	Subbasin:	N/A
	Section:	2

Class:	III		
Special Standards:	N/A		
1-Day, 10-Year Low Flow:	0	30-Day, 5-Year Low Flow:	0
7-Day, 10-Year Low Flow:	0	30-Day, 10-Year Low Flow:	0
Harmonic Mean Flow:	0		
Tidal?	No	On 303(d) list?	No

(See **Attachment 1-** Flow Frequency Memo)

6. Operator License Requirements: The recommended attendance hours by a licensed operator and the minimum daily hours that the treatment works should be manned by operating staff are contained in the Sewage Collection and Treatment Regulations (SCAT) 9 VAC 25-790 et seq. A **Class IV** licensed operator is required for the facility.

7. Reliability Class: Reliability is a measurement of the ability of a component or system to perform its designated function without failure or interruption of service. The reliability classification is based on the water quality and public health consequences of a component or system failure as contained in the SCAT Regulations (9 VAC 25-790 et seq). The permittee is required to maintain **Class I** Reliability for the proposed facility.

8. Permit Characterization:

( ) Private ( ) Federal ( ) State (X) POTW ( ) PVOTW

( ) Possible Interstate Effect ( ) Interim Limits In Other Documents

9. Table 1: Wastewater Flow and Treatment:

Outfall Number	Wastewater Source	Treatment	Flow
001	Domestic Wastewater from showers, restrooms, kitchen from a local security center	Flow equalization, sequence batch reactors, aeration, clarification, sand filter, ultraviolet disinfection, sludge wasting and holding chamber.	0.025 MGD design capacity

See **Attachment 2** for a facility diagram.

10. Sludge Disposal: Mixed liquor is wasted to a holding tank that is periodically pumped out by the owner and transported to the HRSD West Point STP. Sludge disposal methods for this facility are in accordance with the Sludge Management Plan required by the VPDES regulations.

11. Discharge Location Description: The facility discharges to a dry ditch which drains to an intermittent stream that is an unnamed tributary to Urbanna Creek,
Name of USGS topo map: Saluda (123-D) (See **Attachment 3)**

12. Material Storage: Hypochlorite and sodium bisulfate tablets are stored in 5-gallon buckets inside a storage building. Precipitate-Polymer is in liquid form and is stored in 55-gallon drums. The drums are stored inside a storage cabinet. Surplus drums are stored in containment pallets. The pallets are part of an enclosed system that is able to contain a spill if one were to occur preventing the release of contaminated storm water. No other chemicals are stored on site.

13. Ambient Water Quality Information: Due to its ephemeral nature, effluent data was used to characterize low flow conditions of the receiving stream based upon the advice of DEQ Piedmont Regional Office Senior Water Quality Planner, J. V. Palmore.

14. Antidegradation Review and Comments: Tier 1 _X__ Tier 2 __ Tier 3 __

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect those uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The tributary is considered a Tier 1 due to its ephemeral nature.

15. Site Inspection: Performed By: J. Bauer, H. Horne, and M. Williams Date: October 20, 2011 (**Attachment 4**).

16. Effluent Screening:

Effluent data including DMR and temperature data is included in **Attachment 5.**

Conventional Pollutants

The permit limitations for $cBOD_5$, TKN and DO are based on the Stream Sanitation Memorandum by State Water Control Board staff member D.X. Ren dated April 12, 1995. The 1995 model was based on a design flow of 0.0395 MGD. As explained in Item 25 below (staff comments) the current plant design is 0.025 MGD. Senior Planning Staff, Jennifer Palmore, performed the conventional pollutant model using the same input variables and assumptions that were used in 1995, but ran the model at a 0.025 MGD design flow. The model results confirmed that the TKN and DO limitations from the 1995 model were protective of water quality. Additionally, the model indicated that water quality would be protected at a less stringent $cBOD_5$ limitation. However, due to anti-backsliding regulation and policies, the $cBOD_5$ limitation will not be relaxed. The limitation has been in effect for several permit cycles and the permittee has demonstrated compliance with the limitation. **Attachment 6** contains both the 1995 and 2011 model documentation.

Additionally, compliance with the modeled DO limitation will also demonstrate compliance with the Virginia Water Quality Standards (WQS) (9 VAC 25-260-50) – "Numerical criteria for dissolved oxygen, pH, and maximum temperature."

Bacteria

Due to citizen concerns expressed during the public participation process in the 1995 permit modification, the Virginia Department of Health (VDH) recommended by letter dated September 26, 1995 (**Attachment 7)** that the fecal coliform limitation be lowered from 200 N/100 mL to 20 N/100 mL. The fecal coliform limitation decision has been carried through the 1997, 2003, and 2008 reissuances of this permit, and shall carry forth to the 2012 reissuance in addition to an E. coli bacteria limitation. The *E*. coli limitation of 126 N/ 100 mL is based on the Virginia Water Quality Standard 9VAC 25-260-170.

Reasonable Potential Evaluation

Included in **Attachment 8** are the effluent limitation development documents including the MSTRANTI data source table, MSTRANTI spreadsheet of WLAs, and STATS.exe analyses to determine reasonable potential. The MSTRANTI Excel Spreadsheet was used to calculate acute and chronic waste load allocations (WLAs). The WLAs are entered in to the STATS.exe computer application to determine the need for a permit limitation and calculate the limitation.

Even though the effluent is limited to a concentration of 30 mg/L for TKN, an ammonia toxicity evaluation must be performed because the TKN limit may not always protect water quality against ammonia toxicity. Effluent data is not necessary to determine that ammonia has a reasonable potential to impact water quality since it is known to be present in the effluent of domestic wastewater. Typically, an expected concentration of 9.00 mg/L for ammonia is used to determine if limitations are necessary to protect water quality, in accordance with procedures established in GM00-2011 and GM10-2003. However, in this case, since an effluent limitation for TKN is

applicable, and TKN is the sum or ammonia nitrogen and organic nitrogen, it is appropriate to use the TKN limitation as the expected concentration.

The resulting evaluation for ammonia indicated that a limitation of 0.54 mg/L is necessary to protect water quality; therefore, the new limitation is being placed in the permit with a four year schedule of compliance. Upon the effective date of the new ammonia limitation of 0.54 mg/L, the TKN limitation will be removed from the permit. The new ammonia limitation of 0.54 mg/L will be protective of water quality and, therefore, the 3.0 mg/L TKN limitation is unnecessary.

Also, site specific effluent monitoring data for ammonia and TKN indicates that at this facility TKN consists of no more than 30% ammonia (**Attachment 5** – email from S. Nicklas on May 24, 2011). During the schedule of compliance and interim period, the TKN limitation of 3.0 mg/L is more protective of water quality than the ammonia limitation of 1.7 mg/L that was included in the 2008 permit. Therefore, no ammonia limitation is necessary during the schedule of compliance and interim period. This is consistent with agency policy that when a TKN limitation is more protective of water quality there is no need to include an ammonia limitation. Because the 2008 ammonia limitation has not become effective, removal of the limitation does not constitute backsliding.

In the 2008 permit, a final zinc limitation of 36 µg/L was determined necessary to protect water quality based on an observed zinc concentration of 60 µg/L submitted with the reissuance application. The permittee was allowed a four year schedule of compliance to ensure compliance with the new limitation. Monitoring data for dissolved zinc collected in 2011 was analyzed in a reasonable potential analysis for this permit reissuance. Based on recent data collected, the analysis indicates that a permit limitation for zinc is not necessary to protect water quality. The zinc limitation from the 2008 permit is therefore being removed. Removal of this limitation does not violate the anti-backsliding policy, because the zinc limitation has not yet become effective.

A copper limitation of 3.6 µg/L was determined necessary to protect water quality in the 2008 permit based on data submitted with the application. The reasonable potential analysis was performed again with data collected during 2011. The resulting analysis indicated that a copper limitation of 3.3 µg/L is needed to protect water quality. The more stringent copper limitation is the result of a change in the statistical data distribution since 10 observed concentrations were used in the reasonable potential evaluation rather than just one observed concentration used in the 2008 permit limitation development. Since the re-evaluation indicates a more stringent limitation, this limit will be placed in the permit with a compliance schedule. The 2008 permit limitation of 3.6 µg/L will be removed since it has not yet become effective. The permittee is planning to perform a Water Effects Ratio (WER) study to address the copper limitation. A WER study includes the collection of data to calculate a site-specific aquatic life criterion derived for a metal. The adjustment procedure based on the toxicological determination of a WER may be used to account for a difference between the toxicity of the metal in laboratory dilution water and its toxicity in the water at the site. The permittee has been working with DEQ Water Quality Standard staff to develop a protocol for the study that is in accordance with EPA and DEQ policy.

In the 2008 permit, a limitation and schedule of compliance for cyanide was placed in the permit based on the analysis of total cyanide data submitted with the application. Since that time, clarification has been made that the water quality standard for cyanide is for the free component and not total. The permittee has submitted free cyanide data at concentrations less than agency quantification levels. Therefore, free cyanide is presumed absent for purposes of permit limitation evaluation. The cyanide limitation is being removed from the permit since the limitation was included in error and it has not yet become effective.

Hydrogen Sulfide monitoring was placed in the 2008 permit, based on a reported sulfide concentration submitted with the application, in order to attain more accurate test results for further evaluation. Analysis of effluent monitoring data submitted by the permittee indicates that no limitation for hydrogen sulfide is necessary to protect water quality and the monitoring requirement may be removed from the permit.

During the permitting process, the DEQ- Piedmont Regional Office issued a Certificate to Construct to the permittee for installation of ultraviolet (UV) disinfection to replace the tablet chlorination/dechlorination disinfection method. The UV system will be operational upon this 2012 permit reissuance. In correspondence dated 9/27/11, the owner contact indicated that the chlorination/dechlorination system will not be used as a backup disinfection method. Therefore, no TRC evaluation was performed.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MO AVG	WE AVG	MIN	MAX	FREQ	SAMP TYPE
Flow	NA	NL – monitoring only		NA	NL	1 per Day	Estimate
pH	1, 2	NA	NA	6.0 SU	9.0 SU	1 per Day	Grab
$cBOD_5$	3	11 mg/L (1000 g/d)	16 mg/L (1600 g/d)	NA	NA	1 per Month	Grab
TSS	4	11 mg/L (1000 g/d)	16 mg/L (1600 g/d)	NA	NA	1 per Month	Grab
TKN*	4	3.0 mg/L (300 g/d)	4.5 mg/L (430 g/d)	NA	NA	1 per Month	Grab
Ammonia as N (interim)	NA	NL	NL	NA	NA	1 per Month	Grab
Ammonia as N (final)	4	0.54 mg/L	0.54 mg/L	NA	NA	1 per Month	Grab
Dissolved Oxygen	3	NA	NA	6.5 mg/L	NA	1 per Day	Grab
E. Coli	4	126 N/100 mL (geometric mean)	NA	NA	NL	1 per Week	Grab (between 10am and 4 pm)
Fecal Coliform	4	20 N/100 mL (geometric mean)	NA	NA	NL	1 per Week	Grab (between 10am and 4 pm)
Copper, Total Recoverable (interim)	5	NL	NL	NA	NL	1 per Month	Grab
Copper, Total Recoverable (final)	5	3.3 µg/L	3.3 µg/L	NA	NL	1 per Month	Grab

*TKN limitation effective until such time that the final ammonia limitation becomes effective.

1. Water Quality Standards
2. Secondary Treatment Limitations
3. Model
4. Best Engineering Judgment
5. Water Quality Based Effluent Limitations

17. **Basis for Sludge Use & Disposal Requirements:** This facility does not land apply sludge; therefore there are no limitations or monitoring applicable to sludge. Mixed liquor is held in a tank and periodically pumped and hauled to the HRSD West Point STP where sludge will be handled in accordance with the Sludge Management Plan and DEQ Solid Waste Permit 572.

18. **Antibacksliding:** This permit removes the limitation for cyanide and total recoverable zinc included in the previous 2008 permit. A 4-year schedule of compliance was established for both, and final limitations are scheduled to become effective in January 2012. Since the limitations are not yet effective, they are not subject to the anti-backsliding regulation and policy. The change in the method of disinfection from chlorination to UV makes the chlorine limitations irrelevant, and they are being removed. Removal of the chlorine limitations does not constitute backsliding since the new system is a material and substantial alteration to the facility.

The ammonia limitation of 1.7 mg/L included in the 2008 permit has also been removed from this permit reissuance. Review of effluent monitoring data for TKN and ammonia as discussed in item 16 above indicates that the TKN limitation of 3.0 mg/L is more protective of water quality than the ammonia limitation of 1.7 mg/L. Therefore, no ammonia limitation is necessary during the schedule of compliance and interim period. This is consistent with agency policy that when a TKN limitation is more protective of water quality there is no need to include an ammonia limitation. Since TKN is

believed to be protective of water quality and because the 2008 ammonia limitation has not become effective, removal of the limitation does not constitute backsliding.

All other limitations are the same or more stringent than limitations in the previous permit.

19. **Compliance Schedules:** The VPDES Permit Regulation at 9 VAC 25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them. 9VAC 25-31-250 states that "the schedule may allow a reasonable period of time not to exceed the term of the permit."

More stringent limitations for ammonia and total receivable copper are assigned with this reissuance in lieu of modification. It is the best professional judgment of staff that a four year schedule is appropriate to achieve compliance with the new limitations. Annual reports of progress will be required each year preceding the final compliance deadline.
The permittee will be required to perform monthly monitoring for total recoverable copper and ammonia during the four year schedule of compliance.

20. **Special Conditions**

Part I.B: Schedule of Compliance
Rationale: The VPDES Permit Regulation at 9VAC 25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them. See discussion in item 19 above.

Part I.C.1: 95% Capacity Reopener
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B.4 for all POTW and PVOTW permits.

Part I.C.2: Operations and Maintenance Manual Requirement
Rationale: Required by Code of Virginia §62.1-44.19; Sewage Control and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.

Part I.C.3: Licensed Operator Requirement
Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq., Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators.

Part I.C.4: Reliability Class
Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities.

Part I.C.5: Sludge Use and Disposal
Rationale: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

Part I.C.6: Sludge Reopener
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage.

Part I.C.7: Compliance Reporting
Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limitation or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

The Quantification Levels (QLs) given for TSS, TKN, and ammonia (as N) are standard Agency prescribed QLs used to identify the *quantifiable concentration of a particular pollutant in an effluent*

(Guidance Memo 10-2003). The $cBOD_5$ QL was adjusted from 5.0 mg/L to 2.0 mg/L for consistency with recently adopted VPDES General Permit regulations. The QL for total recoverable copper is based on target values that are established as the minimum of 40% of the acute WLA or 60% of the chronic WLA.

Part I.C.8: Materials Storage and Handling
Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

Part I.C.9: Reopeners
Rationale:

a. Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed it they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.
b. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.
c. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

Part I.C.10: CTC, CTO Requirement
Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.

Part I.C.11: Facility Closure
Rationale: Code of Virginia § 62.1-44.19 of the State Water Control Law. This condition establishes the requirement to submit a closure plan for the wastewater treatment facility if the treatment facility is being replaced or is expected to close.

Part I.C.12: Indirect Dischargers
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

Part II, Conditions Applicable to All VPDES Permits
The VPDES Permit Regulation at 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. Changes to Current Permit:

Part I.A.1 Table: Numerical Limitations and Monitoring Requirements

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Flow (MGD)	NL	No Change	NA	No Change	NA	No Change	NA	No Change	1/Day	1 per Day	Estimate	No Change	No Change
pH (SU)	NA	No Change	NA	No Change	6.0	No Change	9.0	No Change	1/Day	1 per Day	Grab	No Change	No Change
$cBOD_5$	11 mg/L 1000 g/d	No Change	16 mg/L 1600 g/d	No Change	NA	No Change	NA	No Change	1/3 Months	1 per Month	Grab	No Change	Reduced monitoring was applied in 2008. Not applicable for the 2012 reissuance. See Item 25. Baseline monitoring frequency re-instated.
TSS	11 mg/L 1000 g/d	No Change	16 mg/L 1600 g/d	No Change	NA	No Change	NA	No Change	1/3 Months	1 per Month	Grab	No Change	
TKN	3.0 mg/L 300 g/d	No Change	4.5 mg/L 400 g/d	4.5 mg/L 430 g/d	NA	No Change	NA	No Change	1/Month	1 per Month	Grab	No change	No Change
Ammonia (as N) INTERIM	1.7 mg/L	1.67 mg/L	1.7 mg/L	1.67 mg/L	NA	No Change	NA	No Change	1/Month	1 per Month	Grab	No Change	The change is the result of the change in the expression of the ammonia limitation from two significant digits to three. **Please note that as a result to comments received during the public comment period, the interim ammonia limitation has been removed. See table below labeled “Changes as a Result of Comments Received.”

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Total Residual Chlorine (TRC)	0.089 mg/L	[deleted]	0.11 mg/L	[deleted]	NA	No Change	NA	No Change	1/Day	[deleted]	Grab	[deleted]	A CTC dated 10/27/11 for the installation of a UV disinfection system was issued to the permittee; and chlorination will no longer be used as a means of disinfection; therefore the chlorination requirements are no longer unnecessary.
Dissolved Oxygen	NA	No Change	NA	No Change	6.5 mg/L	No Change	NA	No Change	1/Day	1 per Day	Grab	No Change	No Change
E. Coli	[new]	126 N/100mL	[new]	NA	[new]	NA	[new]	NL	[new]	1 per Week	[new]	No Change	Included in accordance with Virginia WQS 9 VAC 25-260.
Fecal Coliform	20 N/100 mL	No Change	NA	No Change	NA	No Change	NL	No Change	2/Month	1 per Week	Grab	No Change	Updated sampling frequency to match bacteria-alternative disinfection sampling frequency. 2/Month was established based on VDH concerns. 1 per Week is based on GM10-2003 – VPDES Permit Manual
Total Recoverable Copper	3.6µg/L	NL	3.6µg/L	NL	NA	No Change	NA	No Change	1/Month	1 per Month	Grab	No Change	Because the limitation of 3.6 µg/L did not become effective, the permittee is being given a schedule of compliance for total recoverable copper. Final copper limitation is listed in Part I.A.2. Monitoring frequency format changed.

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Total Recoverable Zinc	36µg/L	[deleted]	36µg/L	[deleted]	NA	[deleted]	NA	[deleted]	1/Month	[deleted]	Grab	[deleted]	Re-evaluation of dissolved zinc data submitted with the permit application indicates that there is no need for a zinc limit to protect water quality. Since the schedule of compliance was not completed, the limitation has not become effective and is being removed.
Cyanide	7.6 µg/L	[deleted]	7.6 µg/L	[deleted]	NA	[deleted]	NA	[deleted]	1/Month	[deleted]	Grab	[deleted]	During the 2008 permit issuance, a cyanide limitation was included in the permit based on data submitted for total cyanide. Since that permit was issued, clarification has been received that the water quality cyanide standard is in terms of free cyanide. The reasonable potential analysis for cyanide was performed using free cyanide data and indicates that no limitation is necessary. Since the limitation has not become effective and it was included in error, it is being removed.

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Hydrogen Sulfide	NL	[deleted]	NL	[deleted]	NA	[deleted]	NA	[deleted]	1/ 6 Months	[deleted]	Grab	[deleted]	The 2008 permit included hydrogen sulfide monitoring in order to more accurately assess the reasonable potential for hydrogen sulfide to impact water quality. The additional effluent monitoring data was re-evaluated and demonstrates that there is no reasonable potential for hydrogen sulfide to negatively impact water quality. Monitoring is therefore being removed.

Part I.A.2 Table: Final Numerical Limitations and Monitoring Requirements for Ammonia and Copper and the Removal of TKN
***(all other parameter limitations and monitoring remains unchanged)**

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
TKN	3.0 mg/L 300 g/d	[deleted]	4.5 mg/L 430 g/d	[deleted]	NA	[deleted]	NA	[deleted]	1/Month	[deleted]	Grab	[deleted]	The TKN limitation will no longer be necessary when the new ammonia limitation becomes effective. Since TKN is comprised of 40-60% ammonia, an ammonia limitation of less than 1.2 mg/L is protective of water quality. By removing the TKN limitation when the new ammonia limitation becomes effective, the permittee is not burdened with the expense of unnecessary monitoring

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Ammonia (as N) FINAL	1.67 mg/L	0.54 mg/L	1.67 mg/L	0.54 mg/L	NA	No Change	NA	No Change	1 per Month	No Change	Grab	No Change	Revised to reflect need for more stringent ammonia limitation in order to protect water quality. The 1.7 mg/L limitation will remain effective until the end of the four year schedule of compliance. **Please note that as a result to comments received during the public comment period, the interim ammonia limitation has been removed. See table below labeled "Changes as a Result of Comments Received."
Total Recoverable Copper	NL	3.3µg/L	NL	3.3µg/L	NA	No Change	NA	No Change	1 per Month	No Change	Grab	No Change	Re-evaluation of the effluent copper concentrations indicates a need for a more stringent copper limitation to protect water quality. Upon completion of 4-yr schedule of compliance new limitation becomes effective.

Changes to Special Conditions:

2008	2012	Special Condition Changed	Reason for Change	Date
Permit Cover	Permit Cover	Intro Paragraph	Revised to reflect January 27, 2010 Permit Manual.	9/2011
Permit Cover	Permit Cover	City	City line item removed since in the Commonwealth of Virginia cities are independent of counties.	
Permit Cover	Permit Cover	County	Added "County" to Middlesex	

Part I.A.1	Part I.A.1	Effluent Limitation and Monitoring Opening Paragraph	Revised to reflect schedule of compliance in the 2012 permit and new limitations that become effective as listed in Part I.A.2.	
Part I.A.1 Footnote (a)	Part I.A.1 Footnote (1)	Flow Design	Reference to additional flow requirements in the special conditions included.	
Part I.A.1 Footnote (b)	Part I.A.1 Footnote (2)	Significant digits footnote	Revised to reflect January 27, 2010 Permit Manual.	
Part I.A.1 Footnote (c)	Part I.A.1 Footnote (3)	Compliance Schedule Reference	Updated reference to schedule of compliance.	
Part I.A.4	[deleted]	Additional TRC limitations Reference	A CTC dated 10/27/11 for the installation of a UV disinfection system was issued to the permittee; and chlorination will no longer be used as a means of disinfection. Chlorination requirements are no longer necessary.	
Part I.A.1 Footnote (d)	[deleted]	Hydrogen Sulfide QL	Hydrogen sulfide monitoring has been removed from the permit and therefore a specified QL is no longer necessary.	
Part I.A.2	Part I.A.1.a	No Floating Solids	No change	
Part I.A.5	Part I.A.1.b	85% Removal Efficiency	Change reference of $cBOD_5$ to BOD_5 in accordance with secondary effluent requirements.	
Part I.A.3	[deleted]	Sampling Location	Removed as this condition is not included in DEQ guidance and the compliance point/ sampling location is defined in the O&M Manual.	
Part I.A.6	[deleted]	0.0395 Flow Tier	In previous permits, the owner requested a tier for the upgrade of the plant to 0.039 MGD. The new owner has indicated that they do not plan to upgrade the plant to 0.039 MGD.	9/2011
Part I.A.7				
Part I.A.8				
Part I.A.9				
Part I.A.10				
[new]	Part I.A.2	Effluent Limitation and Monitoring Opening Paragraph	New limitations, monitoring, and reporting for ammonia and copper after completion of the schedule of compliance.	
[new]	Part I.A.2.a	No Visible Solids		
[new]	Part I.A.2.b	85% Removal Efficiency		
Part I.B	[deleted]	TRC Additional Limitations and Monitoring Requirements	This special condition addressed additional TRC and bacteria limitations. A CTC dated 10/27/11 for the installation of a UV disinfection system was issued to the permittee; and chlorination will no longer be used as a means of disinfection. Chlorination requirements are no longer necessary.	
Part I.B.2	Part I.B	Schedule of Compliance	Revised to address new limitations becoming effective for ammonia and copper.	
Part I.C.1	Part I.C.1	95% Capacity Reopener	Revised to specify “DEQ” Piedmont Regional Office.	
Part I.C.2	Part I.C.2	Operations & Maintenance Manual	Revised to reflect January 27, 2010 Permit Manual.	
Part I.C.3	Part I.C.3	Licensed Operator Requirement	No change	
Part I.C.4	Part I.C.4	Reliability Class	No change	
Part I.C.5	Part I.C.5	Sludge Use and Disposal	Revised to reflect January 27, 2010 Permit Manual.	
Part I.C.6	Part I.C.6	Sludge Reopener	No change	

Part I.C.7	Part I.C.7	Compliance Reporting	Revised to reflect January 27, 2010 Permit Manual; the language deviates slightly from the manual in order to clarify reporting requirements and to explain reporting of data of monitored only parameters. $cBOD_5$ QL revised from 5.0 to 2.0 mg/L.	9/2011
Part I.C.8	Part I.C.8	Materials Storage and Handling	Revised to reflect January 27, 2010 Permit Manual	
Part I.C.9 Part I.C.12	Part I.C.9	Reopeners	Revised to reflect GM07-2008, Amendment 2	
Part I.C.11	Part I.C.10	CTC, CTO Requirement	Reflects January 27, 2010 Permit Manual.	
[new]	Part I.C.11	Facility Closure	New, reflects PRO Staff Decisions (December 2, 2008)	
Part I.C.10	Part I.C.12	Indirect Dischargers	No change	
Part I.C.13	[deleted]	Water Quality Criteria Monitoring for Chlordane	Monitoring completed by permittee and received by DEQ on March 26, 2008.	
[new]	Part II.A.4	Monitoring	Incorporated to reflect change in laboratory accreditation requirements.	

Changes to the Permit as a Result of Comments Received During the Public Comment Period

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Ammonia (as N) INTERIM	1.67 mg/L	NL (mg/L)	1.67 mg/L	NL (mg/L)	NA	No Change	NA	No Change	1 per Month	No Change	Grab	No Change	Revised to reflect that the TKN limitation is believed to be more stringent and protects water quality from ammonia toxicity as discussed in item 16 above. Monitoring of ammonia during the schedule of compliance is required.

Special Condition Part I.C.7.a: The quantification level for $cBOD_5$ has been changed from 2.0 mg/L to 2 mg/L to reflect the level of accuracy of analytical methods.
Special Condition Part I.C.7.e: The portion of the Compliance Reporting condition addressing the reporting of data for which quantification levels have not been established has been removed to reflect the agency boilerplate language as listed in GM10-2003 – VPDES Permit Manual, dated January 27, 2010.

22. Variances/Alternate Limits or Conditions: None

23. Regulation of Users: 9VAC25-31-280 B.9: Not applicable because this is a public treatment works that is a subdivision of the Commonwealth of Virginia.

24. Public Notice Information required by 9 VAC 25-31-280 B:

All pertinent information is on file and may be inspected or copied by contacting

Ms. Jaime Bauer
Virginia DEQ - Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060-6296
Telephone Number: 804-527-5015
Facsimile Number: 804-527-5106
Email: jaime.bauer@deq.virginia.gov

DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit. The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment or may request copies of the documents from the contact person listed above.

Newspaper: The Southside Sentinel
Dates Published: December 8, 2011 and December 15, 2011
Comment Period: Start: December 8, 2011 End: 11:59 pm on January 9, 2012

25. Additional Comments:

a. Previous Board Action: None

b. Staff Comments:

- 9 VAC 25-31-370 allows for permits to be revoked and reissued at the request of any interested person, the permittee, or upon staff initiative. A revocation and reissuance is a bilateral action and both the DEQ and permittee must agree to it. Causes for a revocation (9 VAC 25-31-390) include when a modification to a permit occurs within 15 months of a permit expiration date. The need for a revocation and reissuance is case by case.

  The previous VPDES permit (signed January 16, 2008) was issued to the Middle Peninsula Regional Jail Authority Board and contained a 4 year schedule of compliance for the following parameters: copper, zinc, cyanide, and ammonia. HRSD assumed ownership of the facility on July 25, 2010. Prior to the ownership being transferred, no steps had been taken toward demonstrating compliance with the new limitations by the end of the schedule of compliance (January 15, 2012). HRSD is proposing to conduct a Water Effect Ratio (WER) study for copper. Rather than modify the January 16, 2008 permit to extend the schedule of compliance and allow for the WER study, the DEQ Piedmont Regional Office staff initiated a revoke and reissuance in lieu of permit modification. Additionally, the potential existed that the permit would have to again be modified to incorporate the results of the WER study. Without the revocation and reissuance, three permit actions (2 modifications and a reissuance) would have occurred

within a 15 month period. The agency believed a revocation and reissuance in lieu of modification was appropriate in order to efficiently utilize agency resources and staff time. After discussing the revocation and reissuance option with the permittee, the permittee agreed that the permit action was appropriate and submitted an application for reissuance in lieu of modification. A signed authorization form for revocation and reissuance in lieu of modification was received from the permittee on October 26, 2011.

- The original sewage treatment plant design flow of 0.0099 MGD was proposed in the late 1980s. The State Water Control Board (SWCB) staff established VPDES permit limitations for the plant in a January 1987 modeling exercise (DO = 6.0 mg/L; BOD_5 = 10 mg/L). In 1995, the owners of the plant submitted an application to expand the facility from approximately 0.0099 to 0.0395 MGD. The new design flow was intended to be met by constructing a 0.0295 MGD plant and, when conditions warranted the need to handle more flow, adding the original 0.0099 MGD plant. Modeling was performed based on a design flow of 0.0395 MGD to establish new permit limitations ($cBOD_5$ = 11.0 mg/L; TKN 3.0 mg/L; DO= 6.5 mg/L). It should be noted that the 1995 modeling, indicated that at a higher flow the receiving stream would be able to assimilate a higher concentration of biochemical oxygen demanding materials than the 1987 modeling indicated. Review of modeling documentation indicates that differing modeling approaches were followed between the 1987 and 1995 analyses accounting for the relaxation of limitations under higher design flows.

  Site inspection reports document the new plant was installed, however there has been some questions regarding the design flow of the plant. Documentation of a CTO for the expansion could not be located to confirm the design flow of the plant installed in the late 1990s. The CTO would have been issued by the VDH at the time the new plant was installed. The CTO may have been lost in the transition of files when Virginia DEQ took over the review and approval of the sewage collection system plans and specification program or the documents may have been destroyed in flooding of the VDH downtown Richmond office due to remnants of Tropical Storm Gaston. The permittee provided plant drawings which document that the design flow of the plant is 0.025 MGD. Additionally, after constructing the new plant, the owner abandoned the second phase plans to add the existing 0.0099 MGD plant and it was eventually closed. Due to lack of additional documentation, the DEQ Piedmont Regional Office has accepted the drawings as legitimate documentation of the design flow of the plant and has established permit limitations based on 0.025 MGD. Additionally, DEQ senior model staff ran a model using the design capacity of 0.025 MGD to verify conventional pollutant limitations established in the 1995 modeling of the 0.0395 MGD expansion were protective of water quality. The results indicated that at 0.025 MGD, limitations established based on the 1995 modeling were the same for DO and TKN. Additionally, the limitation for $cBOD_5$ was less stringent at the lower flow design of 0.025 MGD. Conventional pollutant limitations will remain unchanged due to anti-backsliding concerns.

- The application was originally received and deemed complete on September 2, 2011.

- Financial assurance does not apply to this facility because it is a publicly owned treatment works.

- Because this is a board initiated revocation and reissuance in lieu of modification, a permit application fee is not applicable. The applicable permit maintenance fees have been paid through the 2011 fiscal year.

- This project is not considered to be controversial**.**

- The facility is not yet enrolled in the eDMR program. The facility was notified on September 26 2011 of the agency's intention to not issue a hard copy DMR. The permittee responded referencing a letter dated March 15, 2010 in which HRSD notified DEQ that they were in the process of replacing their electronic environmental management system (LIMS) with a new system that will be compatible with eDMR. Conversion to the new system is expected to be complete by the end of 2012. Upon completion, HRSD will enroll in the eDMR program. (See **Attachment 9)**

- This facility is not a participant in the Virginia Environmental Excellence Program (VEEP).

- Registration for coverage under the VAR05 ISWGP is applicable to treatment works treating domestic sewage (TWTDS) facilities with a design flow of 1.0 MGD or more. Because this facility is permitted to discharge less than 1.0 MGD in accordance with its design flow, the VAR05 ISWGP is not applicable at this time.

- This facility is not eligible for reduced monitoring because of the revocation and reissuance classification of this permit action. Additionally, three years of monitoring data under the new owner (HRSD) has not been collected.

- The facility is not considered a significant discharger of nutrients to the Chesapeake Bay watershed. The design flow of the treatment plant is 0.025 MGD. A sewage treatment works plant discharging to the Chesapeake Bay and located downstream of the fall line is classified as significant discharger when the design capacity is equal to or greater than 0.1 MGD. Existing facilities which are non-significant dischargers are subject to the watershed general permit, but not required to register. It is noted however that this owner also owns other sewage treatment works that are considered significant dischargers and are regulated under General VPDES Watershed Permit for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia. The Central Middlesex STP is not part of the aggregated wasteload allocation for nutrients for this owner as provided in the general permit.

- The permit term has been shortened to less than 5 years in accordance with the Piedmont Regional Office VPDES staff decision to have all permits expire at the end of the month to simplify monitoring periods when permits are re-issued.

c. EPA Comments: EPA has waived the right to comment and/or object to the adequacy of the permit.

d. VDH Comments: The application was sent to VDH Office of Drinking Water on 9/26/11. Correspondence received from VHD on 9/29/11 indicates that there are no public water supply intakes within 15 miles downstream of the discharge.

e. Owner Comments: Comments were received from the owner during the public comment period. A copy of these comments and the agency response in included at **Attachment 10** of this fact sheet.

f. Public Comments: The owner submitted comments during the comment period as described in item 25 e. above. Comments were also received from John and Sylvia Bunsavage in an email dated January 7, 2012. A copy of this email is included in **Attachment 10** of this fact sheet.

g. Other Agency Comments: No comments have been received from other state or federal agencies.

h. Planning Conformance Statement: Senior planning staff confirmed on November 29, 2011 that this permit is in conformance with the existing planning documents for the area.

26. 303(d) Listed Segments (TMDL): The receiving stream was not assessed for any of the designated uses during the 2010 305(b)/303(d) Water Quality Assessment and is therefore considered a Category 3A waterbody. This designation does not require the development of a TMDL.

The Urbanna Creek Shellfish Bacterial TMDL was approved by the EPA on 11/15/2005. Although the facility is located within the study area, it was not addressed in the TMDL because the receiving stream drains to a prohibited zone where the shellfish use is considered removed.

The receiving stream is included in the Chesapeake Bay watershed, and the facility was included in the aggregate total nitrogen, total phosphorus, and total suspended solids wasteload allocations for non-significant wastewater discharges in the Rappahannock Mesohaline estuary section of the Chesapeake Bay TMDL approved by EPA on 12/29/2010. The TSS allocations are considered aggregated and facilities with technology-based TSS limits are considered to be in conformance with the TMDL.

27. Summary of attachments to this Fact Sheet:

Attachment 1	Flow Frequency Memo
Attachment 2	Facility Diagram
Attachment 3	Topographic Map
Attachment 4	Site Visit Memorandum
Attachment 5	Effluent data
Attachment 6	Stream Sanitation Analysis
Attachment 7	September 26, 1995 VDH Letter
Attachment 8	Reasonable Potential Analysis and Limitation Development
Attachment 9	eDMR Notification Response
Attachment 10	Comments Received During the Public Comment Period and Agency Response

Attachment 1 – Flow Frequency Memo

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination / 303(d) Status
Middle Peninsula Regional Security Center STP – VA0073318

TO: Jaime Bauer

FROM: Jennifer Palmore, P.G.

DATE: October 3, 2011

COPIES: File

The Middle Peninsula Regional Security Center's sewage treatment plant discharges to an unnamed tributary of Urbanna Creek near Saluda, VA. The discharge is located at rivermile 3-XCM000.80. Stream flow frequencies have been requested at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

The USGS Saluda Quadrangle shows the receiving stream to be a dry ditch which drains to an intermittent stream. The flow frequencies for dry ditches and intermittent streams are listed below:

Outfall 001:

1Q30 = 0.00 cfs	High Flow 1Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
30Q10 = 0.0 cfs	HM = 0.0 cfs
30Q5 = 0.0 cfs	Annual Average = 0.0 cfs

During the 2010 305(b)/303(d) Water Quality Assessment, the receiving stream was not assessed for any designated uses, therefore it is considered Category 3A.

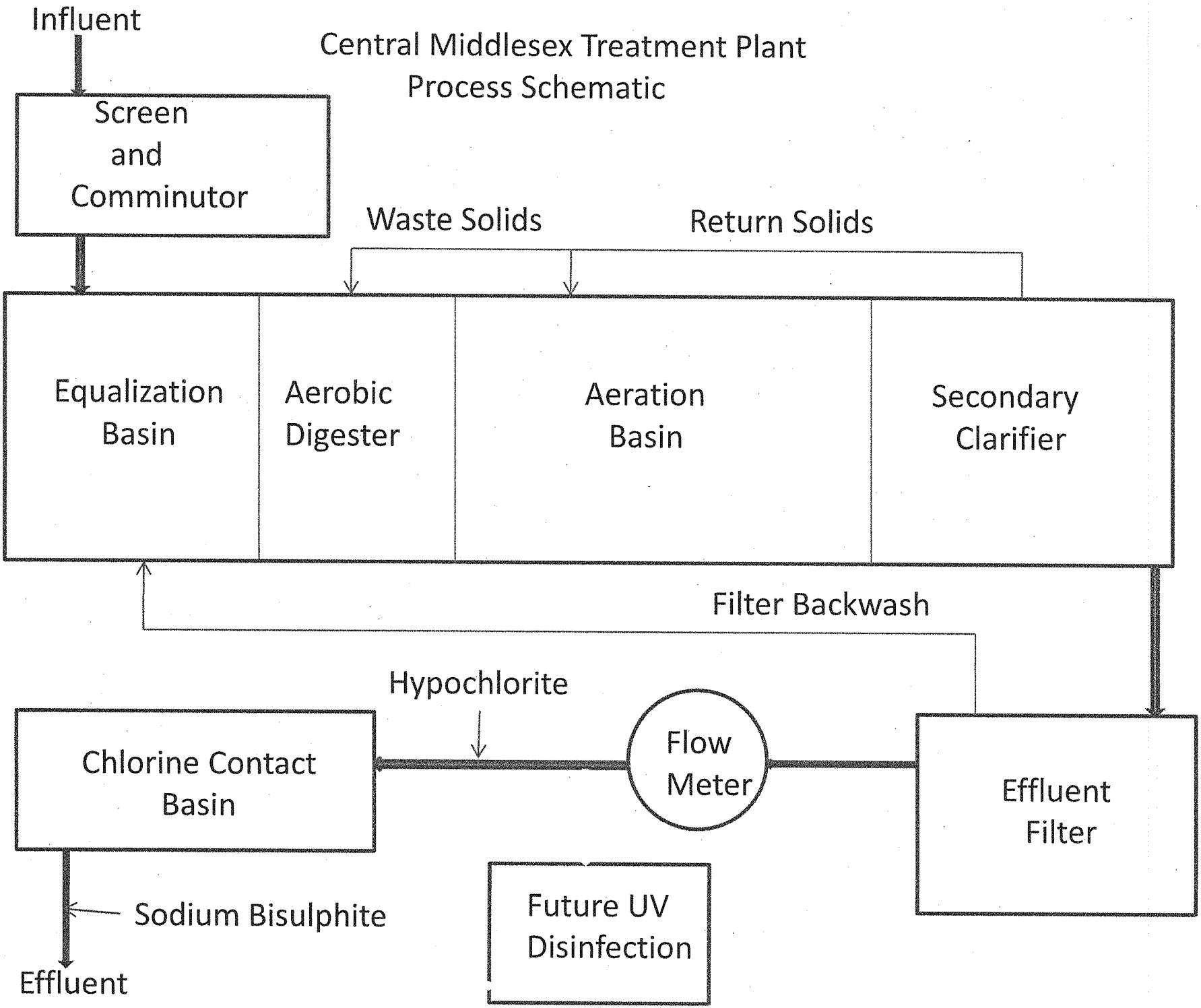
Due to its ephemeral nature, the tributary is considered a Tier 1 water. Effluent data should be used to characterize the stream at low-flow conditions.

The Urbanna Creek Shellfish Bacterial TMDL was approved by the EPA on 11/15/2005. Although the facility is located within the study area, it was not addressed in the TMDL because the receiving stream drains to a prohibited zone where the shellfish use is considered removed.

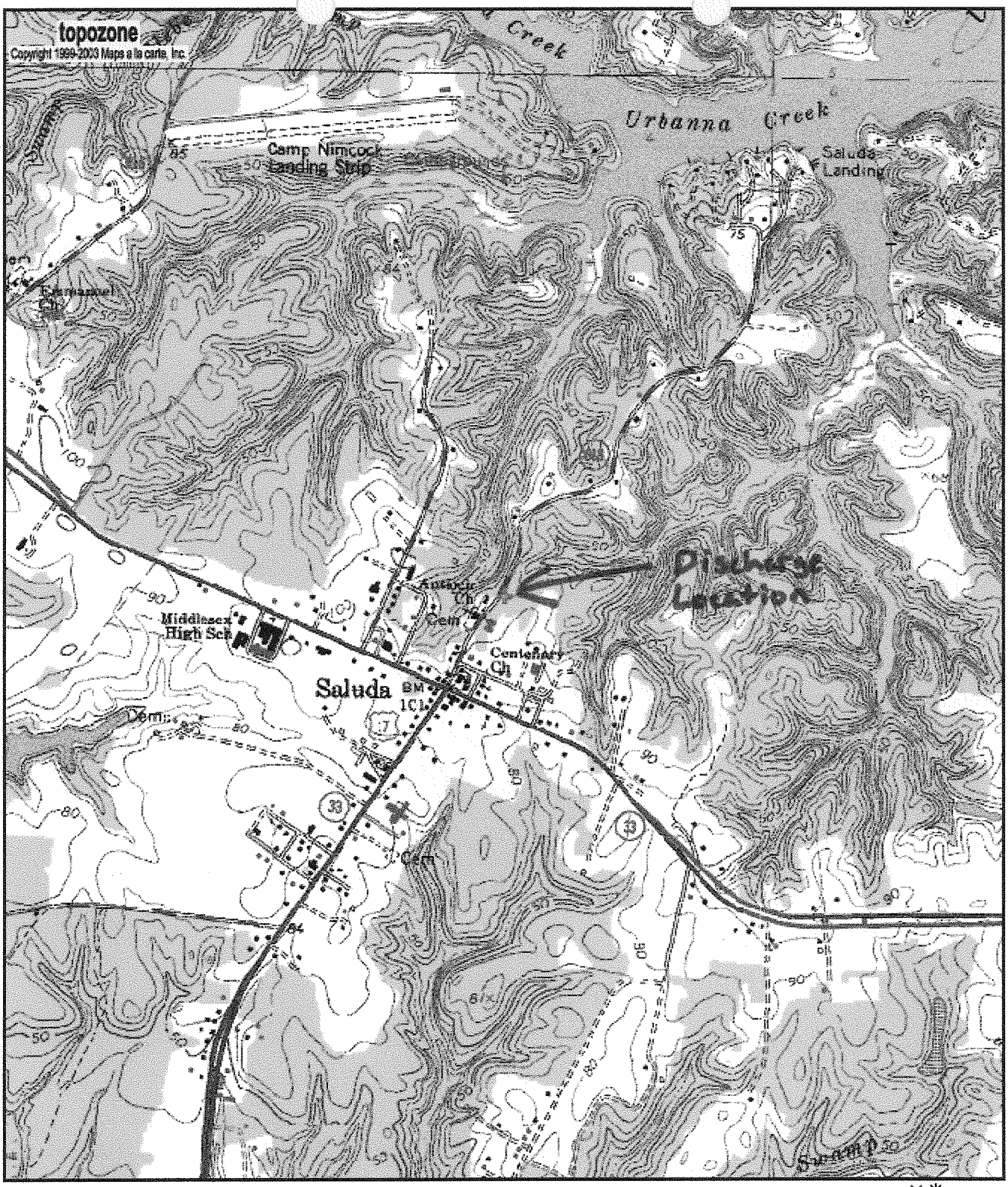
The Chesapeake Bay TMDL was approved by the EPA on 12/29/2010. The security center was included in the aggregated total nitrogen, total phosphorus, and total suspended solids (TSS) wasteload allocations for non-significant wastewater dischargers in the Rappahannock Mesohaline estuary (RPPMH.) The nutrient allocations are administered through the Watershed Nutrient General Permit; the TSS allocations are considered aggregated and facilities with technology-based TSS limits are considered to be in conformance with the TMDL.

If you have any questions concerning this analysis or need additional information, please let me know.

Attachment 2 – Facility Diagram


Influent
Central Middlesex Treatment Plant
Process Schematic
Screen
and
Comminutor
Waste Solids
Return Solids
Equalization
Basin
Aerobic
Digester
Aeration
Basin
Secondary
Clarifier
Filter Backwash
Hypochlorite
Chlorine Contact
Basin
Flow
Meter
Effluent
Filter
Sodium Bisulphite
Future UV
Disinfection
Effluent

Attachment 3 – Topographic Map



0 0.3 0.6 0.9 1.2 1.5 km

0 0.2 0.4 0.6 0.8 1 mi

37° 36' 33"N, 76° 35' 35"W (NAD83/WGS84)

Antioch Church, USGS Saluda (VA) Quadrangle

Projection is UTM Zone 18 NAD83 Datum

M *

M=-10.767
G=-0.972

Attachment 4 – Site Visit Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

Piedmont Regional Office

4949-A Cox Road ; Glen Allen, VA 23060-6296 **804/527-5020**

TO: Sharon Nicklas, HRSD

FROM: Meredith Williams

DATE: October 28, 2011

SUBJECT: VA0073318 HRSD-Middle Peninsula Security Center STP- Recon Inspection Report

COPY: DEQ-ECM file

On October 20, 2011 (0955-1016) Heather Horne and I accompanied DEQ permit writer, Jaime Bauer on a site visit to the subject facility which will be undergoing permit reissuance in the near future. Overall, the plant appeared to be very well maintained and was producing clear effluent. No lab data was reviewed during this site visit.

The facility has installed a new UV system and is awaiting DEQ approval before putting this unit on line. Currently, chlorine/dechlor tablet feeders are still in use. Facility representatives stated that a polymer is being used to try to reduce copper and zinc levels. The blowers in the aeration basin operate continuously. Solids from the digester are pumped and hauled to West Point STP. The plant is adequately staffed with 2 operators (shifts vary), 8 hours per day, 7 days per week. Photographs below were taken during the site visit.

Photograph 1: WWTP Overview

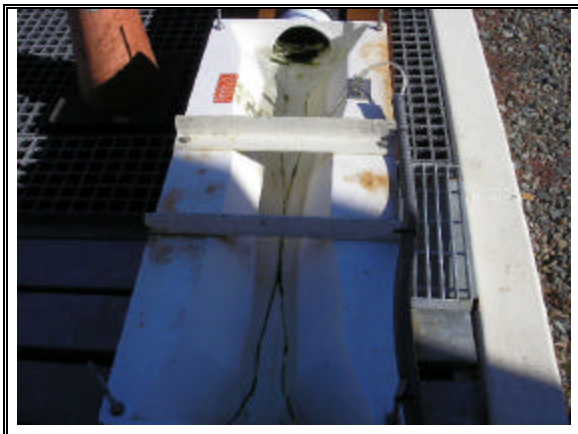
Photograph 2: Influent barscreen; equipped with additional wire to catch larger debris

Photograph 3: Grinder

Photograph 4: Splitter box

Photograph 5: Secondary clarifier effluent trough

Photograph 6: New UV system (not yet in use)



Photograph 7: New trough from UV system

Photograph 8: Chlorine tablet feeder; 3 of 4 tubes in use

Photograph 9: Dechlor 4 tube tablet feeder

Photograph 10: CCT

Photograph 11: Clear effluent and flow meter

Attachment 5 – Effluent Data

Effluent Data

	pH (SU)	
	Min	Max
	8.0	8.5
	7.5	8.5
	8.0	8
	8.0	8
	8.0	8
	8.0	8.5
	8.0	8
	8.0	8.5
	8.0	8
	8.0	8
	8.0	8
	8.0	8.5
	8.0	8
	8.0	8
	8.0	8
	8.0	8
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	8.0	8
	8.0	8
	8.0	8
	8.0	8
	8.0	8
	8.0	8
	8.0	8.5
	8.0	8
	8.0	8
	8.0	8
	8.0	8.5
	7.0	9
	8.0	8.5
	8.0	8.5
	8.0	8.5
	8.0	8.5
	8.0	8.5
	7.5	8.5
	7.5	8.5
	8.0	8.5
	8.0	8.5
	8.0	8.5
	8.0	8.5
	7.8	8.7
	7.8	8.7
	7.6	8.7
	7.6	8.7
	7.9	8.6
	8.2	8.8
	8.1	8.8
	8.2	8.8
	8.1	8.8
	8.4	8.8
	7.9	8.8
	7.1	8.8
	7.3	8.8
	8.3	8.8
90th P		8.8
10th P		8.0

DO (mg/L)
Minimum
7.39
7.13
8.80
8.5
8.31
7.48
7.19
7.38
7.21
7.11
8.95
7.49
8.82
9.15
7.70
7.68
7.01
7.01
6.85
7.02
7.04
7.21
8.08
8.64
7.64
9.20
8.57
7.81
8.24
8.0
7.15
6.57
7.39
7.16
6.97
7.29
7.24
6.89
6.90
7.61
7.48
6.75
7.0
7.2
6.7
7.8
7.5
9
10
9.4
8.4
8.4
6.8
7.3
7.0
7.2

TSS	
Avg (mg/L)	Max (mg/L)
1.1	1.1
1.8	1.8
1.30	1.30
1.4	1.4
1.7	1.7
1.8	1.8
1.6	1.6
2.0	2.0
2.0	2.0
2.6	2.6
1.2	1.2
3.1	3.1
6.7	6.7
1.2	1.2
5.7	5.7
1.5	1.5
1.0	1.0
1.6	1.6
8.4	12.5
1.1	1.1
1.6	1.6
3.9	3.9
<QL	<QL
3.5	3.5
24	114
4.0	4.0
<QL	<QL

$cBOD_5$ (mg/L)	
Avg (mg/L)	Max (mg/L)
<QL	<QL
9.0	9.0
<8.5	15.0
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
5.0	5.0
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
5	5
<QL	<QL
<QL	<QL
<QL	<QL
1	1
3	3
3	11
2.5	2.5
<QL	<QL

TKN (mg/L)	
Avg (mg/L)	Max (mg/L)
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
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<QL	<QL
<QL	<QL
<QL	<QL
2.0	2.0
1.2	1.2
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
0.71	0.71
2.7	4.5
<QL	<QL
0.88	0.88
0.83	0.83
0.80	0.80
0.84	0.84
0.79	0.79
0.70	0.70
1.4	1.4
0.86	0.86
<QL	<QL
<QL	<QL
<QL	<QL

Effluent Data

Parameter Description	Conc Avg	Conc Max
ZINC, TOTAL RECOVERABLE (ug/L)	34	34
	40	40
	90	90
	111.0	111.0
COPPER, TOTAL RECOVERABLE (ug/L)	17	17
	29	29
	19	19
	32.0	32.0
HYDROGEN SULFIDE (mg/L)	1.4	1.4
	<1	<1
	<1.0	<1.0
	0.02	0.02
	<QL	<QL
	<QL	<QL
	<QL	<QL
CYANIDE, TOTAL (AS CN) (ug/L)	<40	<40
	<QL	<QL

Effluent Data

CL2, TOTAL (mg/L)	
Avg	Max
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
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<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL
<QL	<QL

FECAL COLIFORM (N/100 mL)	
Avg	Max
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<2	<2
<1	<1
<1	<1
<1	<1
<1	<1
<1	<1
<1	<1
1.5	2
<1	<1
<1	<1
<3.05	6
<1	<1
<1	<1
<1	<1
<2	<2
<2	<2
<QL	<QL
12	22
16	30
1	1
1	2
1	1
1	1
1	1
1	1
1	1
1	1
1	1
1	1
1	1
1	1
1	1
1	1

Sample Date	Total Zinc (ug/l)	Dissolved Zinc (ug/l)	Report Limit (ug/l)[1]	Method
8/9/2011	9.1	8.1	2.0	EPA 200.8
8/10/2011	13.0	12.7	2.0	EPA 200.8
8/11/2011	13.3	13.7	2.0	EPA 200.8

[1]Report Limit is the lowest concentration at which quantitation is demonstrated.

Sample Date	Total Copper (ug/l)	Dissolved Copper (ug/l)	Report Limit (ug/l)[1]	Method
8/9/2011	4.4	3.7	0.5	EPA 200.8
8/10/2011	4.1	3.8	0.5	EPA 200.8
8/11/2011	3.1	2.8	0.5	EPA 200.8
8/12/2011	2.6	2.3	0.5	EPA 200.8
8/16/2011	2.2	2.0	0.5	EPA 200.8
8/17/2011	2.2	2.0	0.5	EPA 200.8
8/18/2011	2.3	2.0	0.5	EPA 200.8
8/19/2011	2.3	2.1	0.5	EPA 200.8
8/23/2011	2.4	2.0	0.5	EPA 200.8
8/24/2011	2.7	2.2	0.5	EPA 200.8

[1]Report Limit is the lowest concentration at which quantitation is demonstrated.

ANALYTICAL REPORT

Project: HRSD - Central Middlesex Free Cyanide Monitoring
Customer Sample ID: Final Effluent
Project Code: CM
Sample Point: FNE
Sample Date: 3/30/2011

Analyte	Method	Unit	Result	Report Limit	Analyst	Analysis Date	Analysis Time
Wetchemistry							
Free CN*	ASTM D4282-02	ug/L	<10	10	AMOORE	03/31/11	17:15

Notes

Report Limit is lowest concentration at which quantitation is demonstrated.

**The free CN is not included in the HRSD CEL VELAP scope of accreditation.*

Authorization: _____ **Date:** 3/31/11

Lab Manager / QA Manager

ANALYTICAL REPORT

Project: HRSD - Central Middlesex Free Cyanide Monitoring
Customer Sample ID: Final Effluent
Project Code: CM
Sample Point: FNE
Sample Date: 4/25/2011

Analyte	Method	Unit	Result	Report Limit	Analyst	Analysis Date	Analysis Time
Wetchemistry							
Free CN*	ASTM D4282-02	ug/L	< 10	10	RMORGA	04/26/11	7:15

Notes

Report Limit is lowest concentration at which quantitation is demonstrated.

**The free CN is not included in the HRSD CEL VELAP scope of accreditation.*

Authorization: _____ **Date:** 4/26/11

Lab Manager / QA Manager

ANALYTICAL REPORT

Project: HRSD - Central Middlesex Free Cyanide Monitoring
Customer Sample ID: Final Effluent
Project Code: CM
Sample Point: FNE
Sample Date: 4/18/2011

Analyte	Method	Unit	Result	Report Limit	Analyst	Analysis Date	Analysis Time
Wetchemistry							
Free CN*	ASTM D4282-02	ug/L	< 10	10	AMOORE	04/19/11	7:25

Notes

Report Limit is lowest concentration at which quantitation is demonstrated.

**The free CN is not included in the HRSD CEL VELAP scope of accreditation.*

Authorization: _____ **Date:** 4/26/11

Lab Manager / QA Manager

Effluent Temperature Data (°C)

Day	Jan-2011	Feb-2011	Mar-2011	Apr-2011	May-2011	Jun-2011	Jul-2010	Aug-2010	Sep-2010	Oct-2010	Nov-2010	Dec-2010
1	17	14	18	19	21	27	27	28	28	27	20	20
2	16	16	18	19	21	27	26	28	28	27	20	18
3	15	14	18	18	22	26	27	28	29	24	20	18
4	15	14	16	17	23	24	27	28	28	24	22	18
5	14	14	18	19	22	25	27	29	27	23	21	17
6	15	16	18	17	22	24	28	28	27	24	21	16
7	15	16	18	17	22	25	28	29	27	23	18	16
8	15	16	18	18	22	26	30	29	27	23	18	15
9	15	14	17	17	23	27	31	29	26	23	18	15
10	14	16	17	18	23	27	29	29	26	23	18	15
11	14	16	17	19	22	27	28	30	26	24	18	16
12	14	15	17	20	23	27	28	29	26	25	19	17
13	14	15	18	20	23	27	28	29	26	25	19	16
14	15	15	18	20	23	25	27	29	26	25	18	15
15	15	15	17	19	23	25	29	28	26	25	19	15
16	14	15	18	20	23	24	29	28	26	25	20	14
17	14	16	18	19	22	25	29	29	26	22	20	13
18	13	16	18	19	22	26	29	29	25	22	20	14
19	13	15	20	20	22	26	29	29	26	22	20	14
20	16	18	19	21	23	26	29	29	26	22	20	14
21	15	17	19	22	23	25	29	29	26	22	19	15
22	14	14	20	21	23	26	29	29	26	22	18	14
23	14	15	20	22	22	27	29	29	27	23	20	14
24	12	15	19	21	25	26	29	28	27	22	20	15
25	12	16	18	23	24	27	29	28	27	22	20	15
26	14	15	19	24	26	26	28	29	27	22	20	15
27	13	17	18	24	26	27	29	29	27	22	20	13
28	14	18	18	25	26	27	29	29	27	24	14	13
29	14		17	22	26	27	29	28	26	23	18	13
30	14		18	22	26	27	28	27	27	22	18	14
31	14		19		27		29	28		21		14

90th Percentile **28.5**

Bauer, Jaime (DEQ)

From: Bauer, Jaime (DEQ)
Sent: Friday, January 06, 2012 11:11 AM
To: Bauer, Jaime (DEQ)
Subject: FW: MidPen Regional Security Center VA0073318 Ammonia and TKN Data

---

From: Nicklas, Sharon [mailto:SNICKLAS@HRSD.COM]
Sent: Tuesday, May 24, 2011 10:59 AM
To: Bauer, Jaime (DEQ)
Subject: MidPen Regional Security Center VA0073318

Hi Jaime,

I hope everything is going well. Our staff took a look at the email you sent me on April 19 discussing ammonia and were a bit surprised by its content. They knew that ammonia comprised 40-60% of the TKN in the raw influent but had not heard that this also applied to final effluent. Being the data junkies that we are, we dug through some old data and also took some more samples. We found that for this particular plant, the final effluent TKN consisted of less than 25% ammonia on average. Here are the sample results:

DATE	12/1/2009	12/2/2009	12/3/2009	5/3/2011	5/4/2011	5/10/2011	5/11/2011	5/16/2011	5/18/2011
NH3-N (mg/l)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
TKN (mg/l)	0.87	0.94	1.16	1.74	<0.50	0.82	0.90	<0.50	0.70

Based on these results, could you please re-consider our request to apply the DEQ guidance for swamp waters and not include an ammonia limit with the TKN limit?

Have you had a chance to review the free cyanide data I sent to you last month?

Thanks,

Sharon Nicklas
HRSD-Permits Manager
757-460-4245
snicklas@hrsd.com

Attachment 6 – Stream Sanitation Analysis

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Stream Sanitation Analysis
Central Middlesex WWTP - VA0073318

TO: Jaime Bauer

FROM: Jennifer Palmore

DATE: November 22, 2011

COPIES: Modeling File

A stream sanitation request was received for the Central Middlesex sewage treatment plant (STP), which is located in Middlesex County near Saluda, VA. The facility was previously named the Middle Peninsula Regional Security Center STP.

The current discharge was modeled by D.X. Ren on April 12, 1995; his memorandum is attached. At that time, the security center was requesting a permit modification to expand from 0.0099 MGD to 0.0395 MGD. Ren performed a site inspection and determined that the receiving stream flows approximately 0.80 mile before it enters an unmodelable swampy area. He modeled the stream from outfall to the swampy area and applied A.J. Anthony's March 9, 1987 memorandum "Advisory Notification of Effluent Limits for Swamp and Marsh Waters" at the model boundary. Therefore, the free-flowing portion of the stream had to maintain the minimum water quality standard of 5 mg/L dissolved oxygen (DO), and, when entering the swamp, contain no more than 10 mg/L $cBOD_5$ and 3 mg/L total Kjeldahl nitrogen (TKN). In order to meet those conditions, the facility was assigned effluent limits of 11.0 mg/L of $cBOD_5$, 3.0 mg/L of TKN, and 6.5 mg/L (minimum) of DO.

However, it was recently determined that the security center did not construct a 0.0395 MGD treatment plant. Review of the plan drawings indicates that the current facility is rated for only 0.025 MGD. I was asked to re-run D.X. Ren's model using current modeling software (Regional Model 4.11) and the updated effluent flow. No site visit was performed. Documentation of the inputs and model results are attached. Only one significant change was made from the previous model. As the stream is expected to be 100% effluent during the modeled low-flow conditions, the 90th percentile effluent temperature of 28.5°C (as provided by the permit writer) was used instead of ambient water temperature.

The stream is expected to meet the above-stated modeling conditions if the following permit limits are applied:

Flow (Q)	0.025 MGD
$cBOD_5$	12 mg/L
TKN	3.0 mg/L
DO	5.0 mg/L

If you have any questions or need any additional information, please let me know.

Attachment # 7

RECEIVED
APR 17 1995

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4900 Cox Road Glen Allen, VA 23060 804/527-5020

SUBJECT: Proposed Effluent Limits for the Middle Peninsula Regional Jail STP

TO: Curt Linderman

FROM: D. X. Ren

DATE: April 12, 1995

Copies: Debra J Barnes, Jon van Soestbergen, File

Purpose of Study:

The Middle Peninsula Regional Jail STP proposed to expand the treatment capacity from the current flow of 0.0099 MGD to 0.0395 MGD. The discharge runs to an U.T. to Urbanna Creek near Saluda (RM: XCM-000.63, Lat/Long: 343602/0763535), Middlesex County. The current limits are: BOD_5 = 10.0 mg/l, DO = 6.0 mg/l based on January, 1987 modeling efforts by TRO. This memo is to determine effluent limits for the proposed new discharge flow.

Site Inspection:

I performed a site inspection with Debra Barnes of KRO on March 29, 1995. The site visit confirmed the discharge runs a short distance of free flowing unnamed tributary before reaching a swamp area. The receiving stream was identified as a intermittent stream during our site visit. The current wastewater treatment is extended-aeration package plant. The new plant will locate at the other side of stream. Downstream we found a vast swamp/wetland with an undefined channel and a lot of vegetation. No velocity was observed. Therefore that part of Urbanna Creek was determined to be a swamp.

Modeling Approach:

The regional model was generated to simulate this case. The model starts from the new discharge point and ends at the point which enters swamp area. The total length is 0.8 mile. The 7Q10 above the discharge point is assumed to be zero due to the intermittent stream. The year round temperature was determined to be 24.8° C based on the results of a statistical run of Storet data retrieved from 7-DRN003.40. At the end of the modeling profile, the swamp effluent limits applied (10/10/3/3).

cc. Don Caslic, Caslic Engineering
Azhar Mirza, VDH

Based on the modeling results, the following effluent limits are proposed:

Q=	0.0395 MGD
$CBOD_5$=	11.0 mg/l
TKN =	3.0 mg/l
DO=	6.5 mg/l

The ammonia WLAs for the chronic and acute will be determined based on OWRM Guideline Memorandum No. 93-015. The analysis will be made on a case by case basis. To determine the mixing zone requirements, the following modeling inputs were provided for your information: Slope: 0.017 (ft/ft), Stream Width: 1.667 (ft), Bottom Materials: Sand/Earth, Channel Character: Appreciable Meandering.

Because the receiving stream is an intermittent stream which runs into a swamp area, the Tier 1 water was determined for this case.

The computer printout, copy of topographic map, and schematic showing the discharge points are attached for your reference.

If you have any questions, please let me know.

DXR/Saluda
Attachments

Palmore, Jennifer (DEQ)

From: Bauer, Jaime (DEQ)
Sent: Tuesday, November 15, 2011 11:01 AM
To: Palmore, Jennifer (DEQ)
Subject: VA0073318 Central Middlesex STP
Attachments: Attach 6 - 1995 Stream Sanitation.pdf

Jennifer,

As we discussed please, run the model for the subject facility as soon as you have a chance. I have attached the 1995 Stream Sanitation Memo for your use. Based on plan drawings submitted by the permittee, we are proceeding with the assumption that the plant is 0.025 MGD. If you need any additional information, please let me know.

Thanks again,

Jaime

Jaime L. Bauer | Environmental Specialist II| DEQ Piedmont Regional Office | 804.527.5015 | jaime.bauer@deq.virginia.gov

Palmore, Jennifer (DEQ)

From: Bauer, Jaime (DEQ)
Sent: Friday, November 18, 2011 3:48 PM
To: Palmore, Jennifer (DEQ)
Subject: RE: VA0073318 Central Middlesex STP

28.5 - That is 90th percentile of effluent data for one year of measurements.

Jaime L. Bauer | Environmental Specialist II| DEQ Piedmont Regional Office | 804.527.5015 | jaime.bauer@deq.virginia.gov

---

From: Palmore, Jennifer (DEQ)
Sent: Friday, November 18, 2011 3:22 PM
To: Bauer, Jaime (DEQ)
Subject: RE: VA0073318 Central Middlesex STP

What temperatures did you use for MSTRANTI?

Jennifer

From: Bauer, Jaime (DEQ)
Sent: Tuesday, November 15, 2011 11:01 AM
To: Palmore, Jennifer (DEQ)
Subject: VA0073318 Central Middlesex STP

Jennifer,

As we discussed please, run the model for the subject facility as soon as you have a chance. I have attached the 1995 Stream Sanitation Memo for your use. Based on plan drawings submitted by the permittee, we are proceeding with the assumption that the plant is 0.025 MGD. If you need any additional information, please let me know.

Thanks again,

Jaime

Jaime L. Bauer | Environmental Specialist II| DEQ Piedmont Regional Office | 804.527.5015 | jaime.bauer@deq.virginia.gov

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to XCM- URBANNA CREEK, UT.

File Information

File Name:	C:\Documents and Settings\jvpalmore\My Documents\models\Reports\VA
Date Modified:	November 21, 2011

Water Quality Standards Information

Stream Name:	XCM- URBANNA CREEK, UT
River Basin:	Rappahannock River Basin
Section:	2
Class:	III - Nontidal Waters (Coastal and Piedmont)
Special Standards:	None

Background Flow Information

Gauge Used:	#01669000 Piscataway Creek near Tappahannock, VA
Gauge Drainage Area:	28 Sq.Mi.
Gauge 7Q10 Flow:	0.32 MGD
Headwater Drainage Area:	0 Sq.Mi.
Headwater 7Q10 Flow:	0 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	0 MGD
Incremental Flow in Segments:	1.142857E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	28.5 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.084551 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	77 ft above MSL
Model End Elevation:	2 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to XCM- URBANNA CREEK, UT.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	CENTRAL MIDDLESEX STP
VPDES Permit No.:	VA0073318

Discharger Flow Information

Flow:	0.025 MGD
cBOD5:	12 mg/l
TKN:	3 mg/l
D.O.:	5 mg/l
Temperature:	28.5 Degrees C

Geographic Information

Segment Length:	0.8 miles
Upstream Drainage Area:	0 Sq.Mi.
Downstream Drainage Area:	0 Sq.Mi.
Upstream Elevation:	77 Ft.
Downstream Elevation:	2 Ft.

Hydraulic Information

Segment Width:	1.667 Ft.
Segment Depth:	0.056 Ft.
Segment Velocity:	0.414 Ft./Sec.
Segment Flow:	0.025 MGD
Incremental Flow:	0 MGD (Applied at end of segment.)

per Manning's equation

Channel Information

Cross Section:	Wide Shallow Arc
Character:	Moderately Meandering
Pool and Riffle:	No
Bottom Type:	Sand
Sludge:	None
Plants:	None
Algae:	None

"Model Run For C:\Documents and Settings\jvpalmore\My Documents\models\Reports\VA0073318 Central Middlesex STP.mod On 11/21/2011 1:58:15 PM"

"Model is for XCM- URBANNA CREEK, UT."
"Model starts at the CENTRAL MIDDLESEX STP discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
0,	2,	0,	7.085,	28.5

"Discharge/Tributary Input Data for Segment 1"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.025,	12,	3,	,5,	28.5

"Hydraulic Information for Segment 1"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
.8,	1.667,	.056,	.414

"Initial Mix Values for Segment 1"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.025,	5,	30,	0,	7.882,	28.5

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
1.4,	2.069,	20,	24.467,	.35,	.673,	0,	0

"Output for Segment 1"
"Segment starts at CENTRAL MIDDLESEX STP"

"Total"	"Segm."			
"Dist."	"Dist."	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
0,	0,	5,	30,	0
.1,	.1,	5.117,	29.098,	0
.2,	.2,	5.221,	28.223,	0
.3,	.3,	5.316,	27.374,	0
.4,	.4,	5.404,	26.551,	0
.5,	.5,	5.486,	25.753,	0
.6,	.6,	5.563,	24.979,	0
.7,	.7,	5.636,	24.228,	0
.8,	.8,	5.706,	23.499,	0

"END OF FILE"

Attachment 7 – September 26, 1995 VDH Letter

COMMONWEALTH of VIRGINIA

DONALD R. STERN, M.D., M.P.H.
ACTING STATE HEALTH COMMISSIONER

Department of Health
Office of Water Programs

REPLY TO
EAST CENTRAL FIELD OFFICE
CLOVERLEAF OFFICE PARK
300 TURNER ROAD
RICHMOND, VIRGINIA 23225
PHONE: 674-2880; FAX 674-2815

SUBJECT: MIDDLESEX COUNTY
Sewerage - Middle Peninsula Regional
Security Center Expansion

26 September 1995

Ms. Debra J. Barnes, Environmental Engineer
Dept. of Environmental Quality
Water Division, Kilmarnock Office
P.O. Box 669
Kilmarnock, Virginia 22482

Dear Ms. Barnes:

This is pursuant to our discussion on 19 September 1995 and other previous discussions that followed the public hearing regarding issuance of the VPDES permit for the proposed expansion of the sewage treatment works (STW) which serves the Middle Peninsula Regional Security Center in Middlesex County. We have received plans from the engineer for the subject project which include the following in order to provide increased public health protection in the area downstream of the proposed dry ditch discharge:

1. The chlorine contact tank will have more than 60 minute detention time at an average design flow of 39,500 gpd to ensure optimum disinfection of the effluent.

2 A probe will be provided near the end of the chlorine contact tank which will monitor chlorine residual every 2 1/2 minutes and will energize an alarm whenever the chlorine residual drops below a set level. The alarm is actuated at the main control panel for the sewage treatment plant as well as the Jail Control Room, which is always manned 24 hours a day, 7 days a week.

3. The dechlorination process, although included in the plans presently submitted, will be eliminated so that the process of chlorine disinfection continues beyond the chlorine contact tank.

4. The effluent discharge point has been relocated so that the effluent will travel at least 500 feet before it leaves the property of the jail.

5. Four rock check dams will be installed between the point of discharge and the end of the jail property. The purpose of these dams is to maximize retention of the effluent on the jail property, thereby allowing time for additional die-off of pathogens remaining in the effluent and for infiltration of the effluent into the soil. The rock check dams should be designed to retard the flow so that a good portion of the effluent infiltrates into the ground at each dam. Wetland - type plants which are tolerant of shade should be planted in the drainage ditch adjacent to the check dams.

6. By letter dated 6 September 1995, we have previously requested that the VPDES effluent limit for fecal coliform be lowered from 200 N/100 ml to 20 N/100 ml, a ten(10) fold reduction.

Please incorporate the items pertinent to the VPDES permit in the final VPDES permit. If we can be of further assistance, please contact A. N. Mirza at (804) 674 - 2892.

Sincerely,

Randy Monisette

for W. S. Shaw, P.E.
Acting Engineering Field Director
East Central Environmental Engineering Field Office

cc: Mr. David Harmon, Middle Peninsula Regional Security Center
Department of Environmental Quality - Office of Engineering Applications
Middlesex County Health Department
Mr. Don Caskie, P.E., Caskie Engineering
VDH - DSS
VDH - Central Office, DWE

Attachment 8 – Reasonable Potential Analysis and Limitation Development

VA0073318– Central Middlesex STP

MSTRANTI DATA SOURCE REPORT

Stream Information:	
Mean Hardness	Due to its ephemeral nature of the receiving stream, effluent data is used to characterize the stream at low-flow conditions.
90% Temperature	
90% Maximum pH	
10% Maximum pH	
Tier Designation	Flow Frequency Memo (Attachment 1)
Mixing Information:	
All Data	Due to its ephemeral nature of the receiving stream, mixing is assumed to be zero and the stream is effluent dominated under low flow conditions.
Effluent Information:	
Mean Hardness	Best Professional Judgment - Conservative value of 25 mg/L was used
90% Temperature	Effluent Data (Attachment 5)
90% Maximum pH	DMR Data (Attachment 5)
10% Maximum pH	
Discharge Flow	Application Form 2A

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Central Middlesex STP Permit No.: VA0073318

Receiving Stream: UT to Urbanna Creek Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	25	mg/L
90% Temperature (Annual) =	28.5	deg C
90% Temperature (Wet season) =		deg C
90% Maximum pH =	8.8	SU
10% Maximum pH =	8	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	0	%
- 7Q10 Mix =	0	%
- 30Q10 Mix =	0	%
Wet Season - 1Q10 Mix =	0	%
- 30Q10 Mix =	0	%

Effluent Information

Mean Hardness (as CaCO3) =	25	mg/L
90% Temp (Annual) =	28.5	deg C
90% Temp (Wet season) =		deg C
90% Maximum pH =	8.8	SU
10% Maximum pH =	8	SU
Discharge Flow =	0.025	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	5	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.9E+02**
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.3E+00**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.5E+00**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	**3.0E+00**	**--**	**na**	**5.0E-04**
Ammonia-N (mg/l) (Yearly)	0	1.84E+00	2.68E-01	na	--	1.84E+00	2.68E-01	na	--	--	--	--	--	--	--	--	--	**1.84E+00**	**2.68E-01**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	1.84E+00	6.61E-01	na	--	1.84E+00	6.61E-01	na	--	--	--	--	--	--	--	--	--	**1.84E+00**	**6.61E-01**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.4E+02**
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+02**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E-03**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+00**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+04**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+01**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+03**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+03**
Cadmium	0	8.2E-01	3.8E-01	na	--	8.2E-01	3.8E-01	na	--	--	--	--	--	--	--	--	--	**8.2E-01**	**3.8E-01**	**na**	**--**
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	**na**	**8.1E-03**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**na**	**--**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	**na**	**--**
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	na	--	--	--	--	--	--	--	--	--	**1.8E+02**	**2.4E+01**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-02**
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	na	--	--	--	--	--	--	--	--	--	**3.6E+00**	**2.7E+00**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	**na**	**1.6E+04**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.1E-03**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E-03**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**na**	**2.2E-03**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**1.7E-01**	**na**	**--**
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+02**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E-01**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+02**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.1E+03**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+02**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	**na**	**5.4E-04**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.4E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.5E+02**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.5E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E+02**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.4E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E-08**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	**na**	**6.0E-02**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**na**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**7.9E-04**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**3.9E-04**
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E-03**
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+02**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-02**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E-01**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	**9.5E-01**	**--**	**na**	**1.8E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+03**
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**2.0E+00**	**na**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+03**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Lead	0	2.0E+01	2.3E+00	na	--	2.0E+01	2.3E+00	na	--	--	--	--	--	--	--	--	--	**2.0E+01**	**2.3E+00**	**na**	**--**
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.4E+00	7.7E-01	- -	- -	--	--	--	--	--	--	--	--	**1.4E+00**	**7.7E-01**	**- -**	**- -**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+03**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.9E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**3.0E-02**	**na**	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	na	4.6E+03	--	--	--	--	--	--	--	--	**5.6E+01**	**6.3E+00**	**na**	**4.6E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.9E+02**
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+01**
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+01**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+00**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	**2.8E+01**	**6.6E+00**	**na**	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	**na**	**--**
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**6.4E-04**
Pentachlorophenol [C]	0	2.4E+01	1.8E+01	na	3.0E+01	2.4E+01	1.8E+01	na	3.0E+01	--	--	--	--	--	--	--	--	**2.4E+01**	**1.8E+01**	**na**	**3.0E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.6E+05**
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+00**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	--	--	--	--	--	--	--	--	**3.2E-01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	3.6E+01	3.6E+01	na	2.6E+04	3.6E+01	3.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**3.6E+01**	**3.6E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and
   Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Ammonia

Chronic averaging period = 30
WLAa = 1.84 mg/L
WLAc = 0.268 mg/L
Q.L. = 0.2 mg/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 3.0 mg/L
Variance = 3.24
C.V. = 0.6
97th percentile daily values = 7.30025
97th percentile 4 day average = 4.99137
97th percentile 30 day average= 3.61815
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.540735585035571 mg/L
Average Weekly limit = 0.540735585035571 mg/L
Average Monthly LImit = 0.540735585035571 mg/L

The data are:

3.0 mg/L

Copper, Dissolved

Chronic averaging period = 4
WLAa = 3.6 µg/L
WLAc = 2.7 µg/L
Q.L. = 0.5 µg/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 10
Expected Value = 2.49235
Variance = .415110
C.V. = 0.258506
97th percentile daily values = 3.89344
97th percentile 4 day average = 3.14893
97th percentile 30 day average= 2.71361
< Q.L. = 0
Model used = lognormal

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 3.33836747318652
Average Weekly limit = 3.33836747318652
Average Monthly LImit = 3.33836747318652

The data are:

3.7 µg/L
3.8 µg/L
2.8 µg/L
2.3 µg/L
2 µg/L
2 µg/L
2 µg/L
2.1 µg/L
2 µg/L
2.2µg/L

Zinc, Dissolved

Chronic averaging period = 4
WLAa = 36 µg/L
WLAc = 36 µg/L
Q.L. = 2.0µg/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 3
Expected Value = 11.5
Variance = 47.61
C.V. = 0.6
97th percentile daily values = 27.9843
97th percentile 4 day average = 19.1335
97th percentile 30 day average= 13.8696
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

8.1 µg/L
12.7 µg/L
13.7µg/L

Hydrogen Sulfide

Chronic averaging period = 4
WLAa = NA
WLAc = 2 µg/L
Q.L. = 1.0 µg/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 7
Expected Value = .858022
Variance = .265032
C.V. = 0.6
97th percentile daily values = 2.08792
97th percentile 4 day average = 1.42756
97th percentile 30 day average= .1.03482
< Q.L. = 5
Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

140 µg/L
0
0
20 µg/L
0
0
0

2008 Ammonia Limitation Documentation

MSTRANTI DATA SOURCE REPORT

Stream Information	
Mean Hardness	All Stream Information is the same as Effluent Information due to lack of flow in receiving waterbody.
90% Temperature (annual)	
90% Temperature (wet season)	
90% Maximum pH	
10% Maximum pH	
Tier Designation	Flow Frequency Analysis
Stream Flows	
All Data	Flow Frequency Analysis
Mixing Information	
All Data	Dry ditch discharge, 100% mix assumed.
Effluent Information	
Mean Hardness	Hardness concentration provided by the permittee indicated a concentration of 16 mg/L. A minimum hardness of 25 mg/L was used for this evaluation in accordance with the Water Quality Standards.
90% Temperature (annual)	Data provided by permittee in application.
90% Maximum pH	DMR data
10% Maximum pH	DMR data
Discharge Flow	STP Design Flow

2008 Ammonia Limitation Documentation

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Middle Peninsula Regional Security Center STP Permit No.: VA0073318

Receiving Stream: UT Urbanna Creek

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	25	mg/L
90% Temperature (Annual) =	18.8	deg C
90% Temperature (Wet season) =	9.5	deg C
90% Maximum pH =	8.5	SU
10% Maximum pH =	7.5	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD
Annual Average =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	25	mg/L
90% Temp (Annual) =	18.8	deg C
90% Temp (Wet season) =	9.5	deg C
90% Maximum pH =	8.5	SU
10% Maximum pH =	7.5	SU
Discharge Flow =	0.0395	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile [C]	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	**3.0E+00**	--	na	**1.4E-03**
Ammonia-N (mg/l) (Yearly)	0	3.20E+00	8.27E-01	na	--	3.2E+00	8.3E-01	na	--	--	--	--	--	--	--	--	--	**3.2E+00**	**8.3E-01**	na	--
Ammonia-N (mg/l) (High Flow)	0	3.20E+00	1.09E+00	na	--	3.2E+00	1.1E+00	na	--	--	--	--	--	--	--	--	--	**3.2E+00**	**1.1E+00**	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine [C]	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform [C]	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	8.2E-01	3.8E-01	na	--	8.2E-01	3.8E-01	na	--	--	--	--	--	--	--	--	--	**8.2E-01**	**3.8E-01**	na	--
Carbon Tetrachloride [C]	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	na	**2.2E-02**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	na	--	--	--	--	--	--	--	--	--	1.8E+02	2.4E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	na	--	--	--	--	--	--	--	--	--	3.6E+00	2.7E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD [C]	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE [C]	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene [C]	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene [C]	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane [C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	2.0E+01	2.3E+00	na	--	2.0E+01	2.3E+00	na	--	--	--	--	--	--	--	--	--	2.0E+01	2.3E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	na	4.6E+03	--	--	--	--	--	--	--	--	5.6E+01	6.3E+00	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine [C]	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine [C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine [C]	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total [C]	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Pentachlorophenol [C]	0	1.4E+01	1.1E+01	na	8.2E+01	1.4E+01	1.1E+01	na	8.2E+01	--	--	--	--	--	--	--	--	**1.4E+01**	**1.1E+01**	**na**	**8.2E+01**
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.6E+06**
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+01**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+00**
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+00**
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+04**
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**1.1E+04**
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	--	--	--	--	--	--	--	--	**3.2E-01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane [C]	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+02**
Tetrachloroethylene [C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.3E+00**
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+05**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**7.5E-03**
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**6.3E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E+02**
1,1,2-Trichloroethane [C]	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+02**
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.1E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride [C]	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.1E+01**
Zinc	0	3.6E+01	3.6E+01	na	6.9E+04	3.6E+01	3.6E+01	na	6.9E+04	--	--	--	--	--	--	--	--	**3.6E+01**	**3.6E+01**	**na**	**6.9E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	5.1E-02
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

2008 Ammonia Limitation Documentation

12/5/2007 11:13:21 AM

Facility = MPRSC STP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 3.2
WLAc = 0.83
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 3
Variance = 3.24
C.V. = 0.6
97th percentile daily values = 7.30025
97th percentile 4 day average = 4.99137
97th percentile 30 day average= 3.61815
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.67466617753554
Average Weekly limit = 1.67466617753554
Average Monthly LImit = 1.67466617753554

The data are:

3*

* - Please note that GM 00-2011 requires that a concentration of 9 mg/L be entered into the STATS 2.0.4 as a data point in order to force the program to produce a limit for Ammonia if the WLA's are low enough that one is needed. In the case for this permit reissuance, a data point of 3 mg/L was used because there is an existing TKN limit of 3 mg/L proposed by a DEQ regional model dated April 12, 1995. If the TKN limitation is being met, then the Ammonia concentration cannot be above that of TKN.

Attachment 9 – eDMR Notification Response

HRSD
P.O. BOX 5911, VIRGINIA BEACH, VIRGINIA 23471-0911 • (757) 460-7004 • FAX: (757) 318-6452
www.hrsd.com

March 15, 2010

Curtis Linderman
Dept of Environmental Quality
4949-A Cox Road
Glen Allen, VA 23060

RE: King William STP VA0088102 e-DMR

Dear Mr. Linderman:

Hampton Roads Sanitation District (HRSD) has received and reviewed the VPDES permit for the King William STP as well as its attachments.

In regards to DEQ's request for HRSD's participation in DEQ's e-DMR system, this is to confirm that HRSD intends to participate in this voluntarily program. This will require coordination with an upgrade-in-progress of HRSD's electronic environmental data management system, which predates DEQ's electronic system and is vital to our routine operations and reporting at this time.

As previously discussed with DEQ, HRSD is in the process of replacing the existing HRSD system. The HRSD system electronically generates the DMRs for both the individual VPDES permits as well as the general watershed VPDES permits for nutrients. The existing electronic system operates using data that is uploaded from HRSD treatment plants as well as the HRSD Central Environmental Laboratory.

In terms of timing and project status, the Request for Proposals (RFP) for HRSD's new electronic data management system has been issued and responses are due by the end of April, 2010. HRSD anticipates installation of the new data management system will be completed by the end of 2012, and we envision beginning submittals through eDMR soon after that time.

In addition, HRSD is designing its new electronic system to submit its general watershed nutrient permit DMRs along with all of its individual VPDES DMRs to DEQ's e-DMR program. Since DEQ's e-DMR system does not currently accept general permit DMRs, HRSD hopes that DEQ will complete its work to allow for e-DMR submittal of the general permit DMRs by this time.

Please contact me if you have any questions.

Sincerely,

Norman E. LeBlanc
Director, Water Quality Department

Attachment 10 – Comments Received During the Public Comment Period and Agency Response to Comments

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road, Glen Allen, Virginia 23060-6295 **804/527-5020**

SUBJECT: **Dispensation of Request for Public Hearing and Response Comments Received During the Public Comment Period for VA0073318 – Central Middlesex STP**

TO: **Michael P. Murphy, PRO Regional Director**

FROM: **Jaime Bauer, Permit Writer via Curtis J. Linderman, Water Permits Manager**

DATE: **January 10, 2012**

COPIES: **Kyle I. Winter, PRO Deputy Regional Director**

BACKGROUND

On September 2, 2011, DEQ received an application from Hampton Roads Sanitation District (HRSD) for the revocation and reissuance of VPDES permit number VA0073318 for the Central Middlesex Sewage Treatment Plant. The permit was originally issued on January 16, 2008 and expires on January 15, 2013. The permit is classified as a minor, municipal permit.

The owner proposes to continue to discharge a sewage treatment plant to an intermittent freshwater stream which is an unnamed tributary of Urbanna Creek in the Rappahannock River basin. The plant treats domestic wastewater from the Middle Peninsula Regional Security Center. Preliminary treatment of wastewater is by screening and through a comminutor. Wastewater then flows to equalization chamber where treatment by aerobic digestion follows. Following aerobic digestion wastewater is treated by aeration and a secondary clarifier. A sand filter provides additional polishing of the wastewater. Lastly, ultra violet (UV) disinfection is employed. The design capacity of this plant is 25,000 gallons per day.

The 2008 permit included a four year schedule of compliance for new limitations for ammonia, total recoverable copper, total recoverable zinc, and total cyanide. HRSD assumed ownership of the facility two and a half years into the schedule of compliance for these parameters. The previous owner did not perform any actions that would have lead to compliance with the limitations. In the summer of 2011, HRSD proposed to extend the four year compliance schedule for copper to 4 years and 11 months in order to perform a Water Effect Ratio (WER) study for copper. Following the study, a later modification may potentially be necessary to incorporate the results of the WER. Agency staff determined that given the potential for multiple permit actions, revocation of the 2008 permit and reissuance of a new permit was warranted. According to GM10-2003, when a modification request falls within 15 months of a permit expiration date, a permit may be revoked and reissued in lieu of modification. The revocation and reissuance procedures are applied on a case-by-case basis.

The following items were addressed in processing the permit application for reissuance:

1) A more stringent limitation for copper is being assigned after a four year schedule of compliance.
2) The permit issued in 2008 established a limitation for cyanide based on total cyanide data submitted in the application. Staff has determined that this limitation was applied in error because the Virginia Water Quality Standard for cyanide is for the *free* component of cyanide, not *total.* Review of free cyanide monitoring data indicates that no cyanide limitation is necessary in order to protect water quality. The cyanide limitation has been removed.
3) Analysis of additional monitoring data for zinc indicates that zinc limitations are not needed to protect water quality; therefore the zinc limitation has been removed.
4) The hydrogen sulfide data has been evaluated and in accordance with current agency policy continued monitoring is unnecessary and is being removed.

5) An ammonia limitation during the first four years of the permit term is not being required because the TKN limitation is determined to be more protective of water quality and, therefore, an ammonia limitation is unnecessary. However, a new ammonia limitation will become effective upon completion of a schedule of compliance of four years.
6) The proposed permit authorizes the use of UV disinfection to replace chlorination practices.

For discharges to intermittent streams, receiving water flows under design conditions are expected to be zero. Consequently, reasonable potential analyses and effluent limitation development were undertaken to ensure Water Quality Standards were met "end-of-pipe;" or without the benefit of instream dilution. The draft permit proposes to limit the following parameters:

pH	6.0 S.U. min. and 9.0 S.U. max.
cBOD5	11 mg/L monthly average; 16 mg/L weekly average
Total Suspended Solids (TSS)	11 mg/L monthly average; 16 mg/L weekly average
Total Kjeldahl Nitrogen (TKN)	3.0 mg/L monthly average; 4.5 mg/L weekly average
Dissolved Oxygen	6.5 mg/L, instantaneous minimum
E. Coli	126 N/100 mL, monthly average – geometric mean
Fecal Coliform	20 N/100 mL, monthly average – geometric mean
Ammonia as N	0.54 mg/L monthly and weekly average
Total Recoverable Copper	3.3 µg/L monthly and weekly average

PUBLIC NOTICE

Public notice of the intent to reissue the VPDES permit for the subject facility appeared in *The Southside Sentinel* on December 8, 2011 and December 15, 2011. The comment period began on December 8, 2011 and ended on January 9, 2012 at 11:59 pm.

PUBLIC COMMENTS

During the 30-day public comment period, two set of comments were received. The facility owner, HRSD, submitted comments on December 20, 2011. Comments from citizens John and Sylvia Bunsavage were received via email on January 7, 2012 and also requested a public hearing. All comments were submitted in full compliance with the information requirements in 9VAC 25-230-40 of Procedural Rule No. 1.

SUMMARY OF COMMENTS RECEIVED DURING THE COMMENT PERIOD

Issue: Will the discharge from the facility contribute to the degradation of Urbanna Creek?

Comment: "We are writing to oppose the HRSD permit to dump sewage water into any tributary of Urbanna Creek. We have lived on Urbanna Creek since early 2000 and have seen the creek get increasingly worse."

Commenter(s): John and Sylvia Bunsavage.

Staff Response: DEQ staff believes that the proposed permit has been prepared in accordance with all applicable statues, regulations, and agency practices such that the discharge from this facility will not impact water quality of the receiving stream.

DEQ staff recommends that no change to the proposed permit is necessary in response to these comments.

Issue: Is an interim ammonia limitation necessary when TKN is limited to 3.0 mg/L?

Comment: An ammonia limitation is not necessary for discharges to swamp waters when a TKN limitation of 3.0 mg/L exists as specified in DEQ Water Guidance Memo NO. 10-2003 January 2010

VPDES Manual Revisions. Additionally, ammonia effluent concentrations do not exceed 25% of TKN concentrations.

Commenter: HRSD

Staff Response: The facility discharges to an intermittent free flowing stream, therefore, the swamp waters guidance in Guidance Memo NO. 10-2003 does not apply to this facility. However, staff has reviewed the facility's effluent monitoring data for ammonia and TKN which indicates that ammonia comprises no more than 30% TKN. Removal of an ammonia limitation when a TKN limitation exists that is more protective is consistent with DEQ policy.

DEQ staff recommends revising Part I.A.1 to remove the interim monthly and weekly ammonia limitation. The final ammonia limitation remains in the permit with an effective date of 48 months after the effective date of the permit and/or completion of the schedule of compliance. While the ammonia limitation has been removed from Part I.A.1, the permittee should submit monitoring data for ammonia during the schedule of compliance period.

Issue: Is there a need for a weekly ammonia limitation to address the potential chronic ammonia toxicity?

Commenter: HRSD

Comment: DEQ-PRO has included monthly and weekly limits to address the potential for chronic ammonia toxicity. The application of a standard that is meant to represent a 30-day average as a weekly limit contradicts the science used to develop the chronic criteria.

Staff Response: 9 VAC 25-31-230 D.2 of the VPDES Permit Regulation states limitations for continuous discharges from POTWs shall be stated as average weekly and monthly discharge limitations. This requirement is consistent with the federal NPDES regulations. Therefore, a weekly limitation must be included in the permit. DEQ Central Office has agreed to further review if the calculation of a weekly average based on the need to protect water quality from chronic ammonia toxicity is appropriately being applied. Due to the extensive time it will take to review this issue, it is not possible for it to be resolved prior to permit reissuance to meet the needs of the permittee. The ammonia limitation in Part I.A.1 has been removed as discussed above, so this comment no longer applies to that part of the permit. The weekly average ammonia limitation as listed in Part I.A.2 does not become effective until 48 months after the effective date of the permit and/or completion of the schedule of compliance for the new ammonia limitation. Therefore, in the interest of moving forward with this reissuance, this matter may be revisited at a later time by the permittee.

DEQ staff recommends that no change to the proposed permit is necessary in response to these comments at this time.

Issue: Is the quantification level of $cBOD_5$ appropriately listed?

Commenter: HRSD

Comment: The QL for $cBOD_5$ listed in Part I Special Condition C.7.a is incorrect. Test methods for BOD_5 and $cBOD_5$ are not accurate enough to provide data beyond a whole number.

Staff Response: The quantification level for $cBOD_5$ should be expressed as 2 mg/L rather than 2.0 mg/L.

DEQ staff recommends that the QL for $cBOD_5$ be changed in the permit from 2.0 mg/L to 2 mg/L

Issue: How should data measured below quantification levels be reported for bacteria or monitored only parameters?

Commenter: HRSD

Comment: Language in Part I. Special Condition C.7.e is inconsistent with the treatment of data below quantification levels in Part I. Special Condition C.7.b.

Staff Response: The language in Part I. Special Condition C.7.e is included to state how to handle monitoring data reported as less than the quantification level in the cases of bacteria or when no limitation exists. Agency guidance is silent on this topic, however, the language is consistent with how the agency has treated these data in the past and intends on treating them in the future.

DEQ staff recommends that the language in Part I. Special Condition C.7.e be removed from the permit.

Issue: Should the $cBOD_5$ limitation be revised from 11 mg/L to 12 mg/L based on a stream sanitation analysis for a plant of 0.025 MGD design flow?

Commenter: HRSD

Comment: A stream sanitation analysis based on a flow of 0.0395 MGD resulted in a recommended $cBOD_5$ limitation of 11 mg/L. The facility was never built to 0.0395 MGD design. Recently DEQ performed a new stream sanitation analysis based on the flow of the constructed plant, 0.025 MGD. The analysis recommends a $cBOD_5$ limitation of 12 mg/L. DEQ contends that the limitation cannot be relaxed due to anti-backsliding provisions. The anti-backsliding regulation allows for limit modification if information becomes available which justifies the issuance of less stringent limitations.

Staff Response: Due to the complicated nature of this issue, it is not possible to resolve this matter prior to reissuance of the permit in order to meet the needs of the permittee. HRSD has been made aware that if they wish to pursue this issue, they may do so in the future.

DEQ staff recommends that no change to the proposed permit is necessary in response to these comments at this time.

LIST of COMMENTORS
James J. Pletl, Director of Water Quality, HRSD
John and Sylvia Bunsavage

CRITERIA FOR DISPENSING REQUESTS FOR PUBLIC HEARING
§62.1-44.15:02.C of the *Code of Virginia* and 9VAC 25-230-50.A of Procedural Rule No. 1 states that for a public hearing to be granted, the Director must find there is: a) significant public interest; b) there are substantial, disputed issues relevant to the issuance of the permit in question; and c) the action requested is not on its face inconsistent with, or in violation of, the State Water Control Law, federal law or any regulation promulgated thereunder. §62.1-44.15:02.C.1 of the *Code* further defines significant public interest as evidenced by the receipt of a minimum of 25 individual requests for public hearing or Board consideration. Alternatively, §62.1-44.15:02.F of the *Code*, allows for the Director, at his discretion, to convene a public hearing on a permit action or submit a permit action to the Board for its consideration.

STAFF RECOMMENDATIONS

Staff finds the number of individual requests for a public hearing received does not meet the statutory requirements of significant public interest to qualify for convening a public hearing for reissuance of VPDES permit VA0073318, Central Middlesex STP.

In addition, DEQ staff finds the proposed VPDES discharge permit VA0073318 to have been prepared in accordance with all applicable statutes, regulations, and agency practices; the effluent limitations and condition in the permit have been adequately established to protect instream beneficial uses, fish and wildlife resources, and to maintain all applicable water quality standards; and all public comments relevant to the permit have been considered. It is further recommended that the Director direct staff to proceed with approving reissuance of VPDES permit VA0073318 with the changes as addressed above.

STAFF CONTACT:

Curtis J. Linderman
Water Permit Manager
DEQ Piedmont Regional Office
4949-A Cox Road, Glen Allen, VA 23060
Phone: (804)527-5038
Email: curtis.linderman@deq.virginia.gov

APPROVED: _____
Director

Date: 1-11-2012

HRSD

Cleaning wastewater every day for a better Bay.

December 19, 2011

Jaime Bauer
Dept of Environmental Quality
4949-A Cox Road
Glen Allen, VA 23060

RE: Central Middlesex STP VA0073318

Dear Ms. Bauer:

Hampton Roads Sanitation District (HRSD) has reviewed the draft permit and fact sheet for the Central Middlesex STP and offers the following comments for DEQ consideration.

Part I.A.1. of the draft permit lists a monthly and weekly limit for ammonia. HRSD challenges the need for an ammonia limit as this is in direct opposition to DEQ policy which states that in swamp waters a "TKN limit of 3.0 mg/L is stringent enough to protect any receiving waters from ammonia toxicity, hence an NH_3-N limit is unnecessary (Water Guidance Memo No. 10-2003 January 2010 VPDES Manual Revisions). DEQ-Piedmont Regional Office (PRO) states that in this case the TKN limit would not be protective based on their internal policy which suggests that TKN is roughly 40-60% ammonia. HRSD provided effluent data from this facility which demonstrated that on average ammonia was < 25% of the TKN value (maximum ammonia percentage for quantifiable TKN results was ~29%). DEQ-PRO has not provided data to support its claim that NH_3-N is 40-60% of the TKN value nor has it provided any written DEQ guidance explaining why it is justified in deviating from Guidance Memo 10-2003. An ammonia limit in the Central Middlesex permit is not defensible based on DEQ guidance and the permit and fact sheet must be changed accordingly.

In regards to the ammonia limits the permit is also in error as to the assignment of limit duration. Despite the fact that a TKN limit is stringent enough to protect water quality (GM 10-2003, discussed above), DEQ-PRO has included monthly AND weekly limits to address the potential for chronic ammonia toxicity. The alleged need for a limit is based on the potential for chronic toxicity. The imposition of a weekly limit to protect against chronic ammonia toxicity is in opposition to Virginia regulations (9VAC 25-260, January 2011) and EPA's chronic water quality criterion for ammonia. The chronic ammonia standard in Virginia regulations (consistent with the EPA criterion) is expressed as a 30-day average. Chronic toxicity is observed only after an extended duration of exposure. In fact, chronic effect concentrations can be exceeded for a relatively short period of time with no adverse effect on the aquatic environment. The application of a standard that is meant to represent a 30-day average as a weekly limit contradicts the science used to develop the chronic criteria. A single excursion of a chronic ammonia limit in a

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7-day time frame will not cause an impact in the aquatic environment provided the acute wasteload allocation is not exceeded for the duration of the applicable acute ammonia standard (refer to the 1985 Technical Support Document for Water Quality Based Toxics Control, EPA 440/4 85 032 for further discussion on duration and frequency as applied to the control of toxic pollutants). Use of the chronic limit with a weekly duration is not technically nor scientifically defensible, therefore it cannot be used in a VPDES permit in this way.

Part I. Special Condition C.7.a. lists the quantification levels (QL). The $cBOD_5$ QL is listed as 2.0 mg/l. DEQ Guidance Memorandum 06-2016 acknowledges that the $cBOD_5$ and BOD_5 methods are not accurate enough to provide data beyond a whole number. Therefore, the correct QL for the $cBOD_5$ is 2 mg/l.

Part I. Special Condition C.7.e. contains new language which is inconsistent with the treatment of data below the quantification level (QL) in paragraph b. of the same section. HRSD objects to reporting data calculated using two different methods on the same discharge monitoring report (DMR) as well as the permit's deviation from guidance and the language used in hundreds of previously issued permits. The new language requires that the absolute value of the less than QL data for certain parameters be used for calculations. This will result in a representation of data that does not address the uncertainty associated with measurements below QL, an inconsistency with how other parameters are addressed relative to QLs, and confusion for the public. Further, DEQ has not modified its guidance to support this new interpretation of data reported below QL. For example, a parameter is monitored weekly and the following data points are generated:

<0.50 mg/l
<0.50 mg/l
<0.50 mg/l
0.80 mg/l

Under the conditions of paragraph b, the monthly average would be reported as 0.20 mg/l. Under the newly proposed language of paragraph e, a monthly average of <0.58 mg/l would be reported. DEQ-PRO has not provided any technical or scientifically defensible reason for the use of data below QL to change and HRSD has no assurance that this change follows that accepted by DEQ Central Office or the other DEQ regions. Additionally, the public and the compliance auditor reviewing the DMR do not have any way of knowing that this particular parameter was calculated using a method different than the monthly $cBOD_5$ and TSS averages. All data below QL for individual permits, according to DEQ permit precedent and DEQ guidance, is to be treated as zero when calculating permit limit statistics. The language referenced above must therefore be changed to follow precedent and guidance.

Fact Sheet

Item 16. of the fact sheet acknowledges that modeling indicates that a less stringent $cBOD_5$ would be protective of the receiving waters but the limit will not be modified due to the antibacksliding regulation. Attachment 6 of the instream sanitation analyses shows that not only is the $cBOD_5$ overly stringent but a more stringent dissolved oxygen limit was also implemented. HRSD objects to the rationale that these limits cannot be corrected due antibacksliding because DEQ has not properly followed the applicable regulation. 9VAC25-31-220.L.2.b.(1) states that a permit may be reissued with a less stringent effluent limitation if, "Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of the permit issuance." Attachment 6 of the fact sheet states that the modeling which generated a monthly $cBOD_5$ limit of 11 mg/l and a dissolved oxygen limit of 6.5 mg/l was based on a plant discharge flow of 0.0395 MGD. These limits should have been listed to become effective with the issuance of a Certificate to Operate the 0.0395 MGD facility. However, the facility was never built and HRSD has confirmed with DEQ that it has no plans to expand the current 0.025 MGD facility. Based on this information, DEQ ran the stream sanitation analytical model at a flow of 0.025 MGD which is the correct flow. The DEQ model calculates that a $cBOD_5$ of 12 mg/l and a dissolved oxygen of 5.0 mg/l are protective of the receiving waters. The antibacksliding regulation allows for limit modification if information becomes available which justifies the issuance of less stringent limits. Therefore, the approach that complies with regulation and is technically and scientifically defensible is that which uses the appropriate flow for the facility. This approach results in a $cBOD_5$ monthly limit of 12 mg/l and a dissolved oxygen minimum limit of 5.0 mg/l. Use of other limits does not follow regulation and is not technically or scientifically defensible.

Please contact me if you have any questions or would like to discuss HRSD's concerns.

Sincerely,

James J. Pletl, Ph.D.
Director of Water Quality

Bauer, Jaime (DEQ)

From: bunsava@aol.com
Sent: Saturday, January 07, 2012 12:05 PM
To: Bauer, Jaime (DEQ)
Subject: Fwd: Hampton Roads Sanitation District Permit #VA0073318

-----Original Message-----
From: bunsava <bunsava@aol.com>
To: JaimeBauer <Jaime.Bauer@deq.virginia.gov>
Sent: Fri, Jan 6, 2012 7:47 pm
Subject: Hampton Roads Sanitation District Permit #VA0073318

We are writing to oppose the HRSD permit to dump sewage water into any tributary of Urbanna Creek.

We have lived on Urbanna Creek since early 2000 and have seen the creek get increasingly worse. I thought Virginia was supposed to be cleaning up its creeks and rivers, especially the Chesapeake Bay.

As regards requesting a public hearing concerning this permit we are in favor of that but the last public hearing we went to held by DEQ was of little help as the citizens were allowed to voice their concerns by DEQ went ahead and disregarded the citizens anyway.

Please help save the Bay!

Thank you..

John & Sylvia Bunsavage
455 Molly's Way
Saluda, Va. 23149
(Urbanna Harbour Subdivision)
(804)758-9283

Mailing Address: POB 184
Urbanna, Va. 23175